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The Chemists' and Druggists' Trade Association has won its maiden victory in the law courts over the milk of sulphur difficulty. It may be assumed that this question is now finally disposed of. The association brought forward a mass of testimony of the greatest weight, and after hearing about half of what they had to say the magistrates decided that there were two distinct preparations, lac sulph. and sulph. præcip., and that it was perfectly legal to sell either substance. The Bench was composed of men of high standing, the chairman being the Recorder of Chester and a County Court Judge, and the Solicitor-General being among the magistrates. Costs were refused on the ground that milk of sulphur not being in the Pharmacopoeia the prosecution was justifiable, a reason so utterly unreasonable that that portion of the decision might probably be reversed in its turn if the Association should care to continue the contest.

There are 23 candidates for the 14 vacant seats on the Pharmaceutical Council. All the retiring members of council are on the list for re-election, except Mr. Frazer, of Glasgow, whose withdrawal is most sincerely to be regretted. His thorough independence has been as marked as his shrewdness, and both have been tempered by the most rigid honesty of purpose and geniality of disposition. The new men proposed are Mr. H. C. Baildon (Edinburgh), Mr. W. Bulgin (Gravesend), Mr. W. J. Churchill (Birmingham), Mr. G. A. Cubley (Sheffield), Mr. J. Deane (Clapham), Mr. T. P. Gostling (Diss), Mr. J. B. Guyer (Torquay), Mr. J. G. F. Richardson (Leicester), Mr. E. B. Vizer

(Brighton), and Mr. G. S. V. Wills (London). We hope to see more than one of these take their seats on the new council. Several of them are men of vigour and ability, and nothing will so effectually rouse the Pharmaceutical Council to spirited action at this serious crisis as the substitution of several entirely new men for some of the very excellent, but not over-daring, councillors who represent us at present.

We learn that on Wednesday next, the 18th inst., a meeting of London chemists and druggists will be held at 17 Bloomsbury Square, the Pharmaceutical Council having kindly lent their lecture theatre for the purpose, with the object of discussing means of promoting the earlier closing of pharmacies in the Metropolis. We hope a large number will be present, and that many pharmacists in various parts of London will be encouraged to initiate a decided move towards the end which all see to be so desirable. To wait for absolute unanimity in this matter is like waiting for the river to run by before attempting to cross its bed. Those who can afford the risk must march boldly on, and the crowd will assuredly follow.

An anonymous gentleman offers a hundred pounds to the Pharmaceutical Benevolent Fund if forty-nine others will give a similar sum before May 15, or fifty pounds if ninety-nine will join him in such a contribution within the same period. The offer may be a serious one, but if so the gentleman must possess an amazing faith in the combined wealth and liberality of British pharmacists.

Associations of chemists and druggists have been formed lately at Blackburn and Ryde. The former has educational objects in view; the latter is in affiliation with the Trade Association.

An Irish pharmaceutical chemist tells us how inefficiently the Pharmacy Act of Ireland is being administered. No attempt at all seems to be made there to interfere with illegal dispensing.

Mr. Reinhardt, the head of the well-known firm of chemists at Leeds, offers to travel through the whole of the country to rouse the chemists to a defence of their position against the attack of the apothecaries, if the Trade Association will pay his expenses.

We made an erroneous statement last month in reference to Fresenius' "Qualitative Analysis," which, at the polite request of the publishers, we very gladly rectify in this issue.

Two valuable papers on pharmaceutical subjects were read before the Irish Pharmaceutical Society lately, and are reported by us. One, by Dr. E. Davy, gives an apparently accurate and simple test for the detection of the mixture of alcohol with essential oils; the other, by Dr. R. J. Downes, treats on Ung. Hyd. Ox. Rub., and recommends vaseline as the medium for the chemical

We report an interesting trade mark case, brought by the proprietors of "lactopeptine" against Messrs. Morson & Son and Messrs. Mackey, Sellers & Co., for infringement of their property by the sale of a compound which they called "lactopepsine." The Court considered that the colourable imitation had been clearly proved, and a perpetual injunction was granted.

At Lambeth Police Court, on the 10th inst., a Professor of Chemistry, named Henry Hutchinson, was charged with stealing a purse from the pocket of a woman at the Crystal Palace. Three other purses were found in his possession. Much evidence as to the high respectability of the prisoner was given, and Mr. F. Versmann stated that he was well-known to professional

men as the patentee of a process for the separation of mineral ores, but the magistrate said he had no choice but to commit the prisoner for trial. Bail was accepted.

The Chemists' and Druggists' Trade Association, having asked the Apothecaries' Company to abstain from further proceedings against chemists and druggists for counter prescribing until the appeal to the Court of Queen's Bench in Mr. Shepperley's case had been decided, the society has replied declining to give any such undertaking.

An assistant surgeon in the United States army has shown that the charge of inaccurate dispensing made against English chemists, and based on the investigations of Mr. William Thompson, of Manchester, last year, are not well founded. He shows that iodide of potassium is never absolutely pure, and that the average deficiency of the chemicals in the mixtures is more than accounted for by the average degree of impurity in the salt.

Proctor's medicine measures, which we noticed last month, were rather unfavourably criticised at the last Pharmaceutical meeting in London. To the criticisms Mr. Proctor writes an able reply in this number of our journal.

The Pharmaceutical Council of Ireland is drawing up a chart showing the range of doses of poisonous and dangerous drugs. This is no doubt a useful occupation, but it seems a little outside the circle of their prescribed duties.

Quinine has advanced to the high price of 16s. per oz., and if war breaks out will no doubt be still dearer. Barks are bought up with the utmost eagerness, and some fine East Indian has realised as much as 15s. 8d. per lb. during the past month. In other respects the drug and chemical markets are very quiet.

The Budget for 1877-8, brought forward in the House of Commons on Thursday evening last, is a model of simplicity. It simply does nothing, and the Chancellor of the Exchequer hopes that, notwithstanding a constantly shrinking trade, some 200,000l. margin will be sufficient to meet the unknown difficulties with which the coming year seems crowded.

The Clothworkers' and Merchant Tailors' Companies have each contributed 100 guineas towards the research fund of the Chemical Society. Are these recent outbursts of liberality on the part of these City companies at all connected with the growing desire among reformers to inquire into the terms on which they hold their property? The Solicitor-General, in Parliament the other night, said we had no more right to interfere with the funds than with any other private property. But we want to know if this is private property?

In an interesting historical sketch of inoculation as a preventive of the dangerous character of smallpox, Dr. W. B. A. Scott shows how in this instance the tradition of the "vulgar" has been more reasonable than the pompous prejudice of the profession.

We print this month the concluding part of the historical sketch of poisons read before the French Pharmaceutical Congress at Clermont-Ferrand. Our contributor, Mr. Piper, also furnishes us with additional curious lore in reference to the names of the foxglove. These notes will be continued.

Our next month's issue will be circulated very largely among the pharmacists of the United States. Several thousands of specimen copies will be distributed there, so that the opportunity of advertising English specialities will be an unusually good one. Firms will much oblige by communicating with us on the subject as early as convenient.

Pharmacalia.

More than usual excitement characterised the proceedings of the Chemical Society at its anniversary meeting, held on March 29. Professor Abel, the retiring President, was in the chair. At an early hour the library was filled with Fellows, all of whom seemed to anticipate some development of latent heat in the course of the evening arrangements. Nor were such anticipations doomed to be disappointed. The business commenced with the reading of the report, selections being made from the obituary notices of the deceased members of the society during the past year. Several of these short biographies were of extreme interest, and showed the many-sided excellencies of departed chemists, some of whom enjoyed a wide reputation; while others, less generally known, were not less distinguished in their own world, as men who had advanced the interests of science.

Robert Southey was mistaken when he declared that the pursuit of abstract knowledge was antagonistic to the general cultivation of the intellectual powers. Alfred Smee alone may be cited as an instance to the contrary, for he seems to have been possessed of rare accomplishments, and by no means to have limited his range of thought to the field of electrical discovery. Others, with wonderful versatility as linguists, travellers or investigators, might have made themselves famous in different branches of natural science had not their exploits in chemistry overshadowed other efforts.

Next, the endowment fund for original research claimed attention. More than a thousand pounds in addition to 1,000l. from the Goldsmith's Company had been raised to equal Dr. Langstaff's grant, and vigorous measures had been undertaken to enlist the co-operation of the City Companies.

Lastly came the subject which has so disquieted the deliberations of the council, the continued and pertinacious system of black-balling candidates that had so rigorously been carried out. The rejection of names fairly entitled to the honour of fellowship had assumed a pitch which threatened the prosperity of the society. For this wholesale disqualification no reasonable motive had been assigned—nor were the council placed in a position to ascertain in what manner they could rectify past errors, unless the grounds for dissatisfaction were pointed out. In fact they did not possess the confidence of a certain section of the Fellows, and unless a decisive alteration with regard to mutual understanding was effected the fortunes of the Chemical Society were imperilled. It was obvious that the existence of such mutual understanding was essential to any voluntary association. Professor Abel ventured to express the hope that all the Fellows, adverse or otherwise, would credit him with having striven to the utmost of his ability to promote the welfare of the science to which in common they were devoted, and be felt sure that he should incur no censure for the outspoken way in which then and on all occasions he had declared his views. Great and well-deserved was the applause which greeted these remarks.

Professor Williamson, when rising to propose the adoption of the report, adverted to the strong undercurrent of feeling that had been shown with regard to non-election. On what grounds this procedure rested neither he personally nor the council were aware. He would compromise no one in the matter, but state his own convictions. He had abstained from promoting the election of any candidate, as he had no means of estimating the chances of success or failure. One circumstance he had noticed, that the title of Science Teacher was synonymous with rejection. He thought that there should be some definite explanation of the course that had been adopted.

Scarcely had the Professor ended when the pent-up dissatisfaction found audible expression, nor could anything be more

fortunate for the council than that such an opportunity was afforded. One of the Fellows, Mr. E. Neison, had preceded Professor Williamson with a list of grievances. The general Index of the Journal had been compiled at great expense: its sale was unremunerative, and as financially it had been unsuccessful it should be gratuitously distributed. The Preparation Laboratory was inefficient; the publication of the Journal was unreasonably delayed; and that black-halling had been resorted to in order to exclude those who might degrade or misuse the title of F.C.S. He denied (and subsequent speakers also) that the rejection of applicants had been indiscriminate. Others, notably Mr. Kingzett and Dr. Thudichum, complained of the delay in producing abstracts, and of the manner of their execution: not unfrequently the matter had been anticipated in other journals. Mr. Kingzett condemned the conduct of the committee of publication who had returned a joint paper of himself and Dr. Hake with suggested emendations: the manuscript was undermarked with blue pencil, and queries were inserted. Allusion was also made to the presence of advertisements on the society's wrappers. The feeling of the opposition seemed to be that journal matters needed practical improvement—and that the system of black-halling which the report had officially condemned had been adopted to defend the society from undesirable members.

Dr. Odling in few words explained and supported the action of the council. He observed that that body was elected by the Fellows, and that in case of dissatisfaction the remedy was in their own hands. The laboratory, he admitted, was not yet in an efficient state, but measures would be taken to render it complete. It was in the power of Fellows who considered themselves aggrieved for any ten of their body to call a special meeting and discuss the subjects of complaint. Black-halling, in other words the discretion of rejection, was a power with which he should be sorry to interfere; yet it should be used advisedly, with caution and on just grounds. He found that eight or nine were in the habit of using this prerogative of exclusion. It must be recollected that their society was a voluntary association, and that by the exercise of mutual trust and good-will it could alone hope to stand. He regretted the delay in the publication of the papers, and that was a point which should receive full consideration. The delay was often unavoidable, as more than one opinion had to be consulted with reference to production.

At this juncture an adjournment of the whole question to a special meeting was suggested. Mr. E. Riley therefore seconded the original motion that the report be adopted. As an amendment it was proposed that the words *unjust* and *indiscriminate*, with reference to black-halling, be omitted. Finally, the general meeting, by an overwhelming majority, decided in favour of the council and its proceedings. Dr. Gladstone was elected President for the ensuing year.

We are not in the secret of the workings of the Chemical Society, but we would hazard the assertion that some source of discontent existed, deeper than that made apparent at their anniversary. If the Fellows are dissatisfied with the conduct of their journal, there seems no reason why they should not openly state their disapprobation—there seems less for any fear to be entertained that fair remonstrance would not meet with due attention. The weak spot in the committee of publication is that it should make itself responsible for the opinions contained in the signed papers of contributors—a responsibility with which no experienced editorship would be burdened, and which is fertile in misunderstandings. But no reasonable person can defend the wholesale rejection of applicants for Fellowship, an expedient which, as far as the interests of the society is concerned, is tantamount to suicide. To state, by inference, that the members of the council have of late been

handed together in promoting the election of unworthy members, and that their plans must be frustrated by the halloo box, is contrary to common sense; neither does it carry out the spirit of the new obligation to be signed on admission—"I, the undersigned, do hereby engage that I will endeavour to promote the interests and welfare of the Chemical Society, that I will observe its laws, and to the utmost of my power maintain its dignity as long as I shall continue a Fellow thereof."

Dark and lowering, wet and most uncomfortable, was Monday, April 2. This was the day fixed for hearing the appeal at the Knutsford Quarter Sessions against the decision of the magistrates at Runcorn respecting milk of sulphur. Thither went Professor Redwood, certain well-known representatives of the wholesale trade, London manufacturing chemists, and retail pharmacists. Manchester sent Mr. Siehold, while Birmingham had the advantage of being medically represented by Mr. Pemberton. Fate seemed as adverse as the weather. There was the routine of local business to be transacted; and in the midst of a restless, elbowing crowd the witnesses had to wait about the court under circumstances of melancholy discomfort. When the case was called the magistrates who had pronounced the adverse sentence against which appeal was made put in no appearance. Counsel was there in the person of Mr. Clement Higgins; the chairman of the bench was there, Mr. Horatio Lloyd, barrister, to adjudicate upon the matter; a tall, smiling inspector was there, very much astonished to find himself called upon to defend a case in which he had no shadow of personal interest; and the analyst was there, a Mr. Carter Bell. Neither the inspector nor analyst were inclined to take further steps, and there was a strong chance that judgment should have gone by default.

Counsel represented that the case was typical, and that other cases depended on the decision of the Bench, and that the Chemists' and Druggists' Trade Association, which had instituted the appeal, was anxious to have the question finally set at rest, and decided upon the merits of the case. He pointed out also that in consequence of the importance of the bearings of the question on trade pharmacy, an array of witnesses, representing manufacturing and commercial practice, had been procured at considerable expense, and that both medical and scientific opinion of the highest character had been obtained. Much whispering followed between the analyst and the inspector, when it was determined to show fight. The case was adjourned to the next morning, Mr. Marshall being commissioned to appear as counsel for the plaintiffs.

Tuesday was yet more dreary than the preceding day: the rain poured down in a hopeless manner, and a party of gaily-dressed gipsies formed the sole object of distraction.

The crowd dispersed entirely, and before an empty court, as far as visitors were concerned, the case was argued out.

Great praise must be awarded to the counsel for the plaintiffs. Mr. Marshall did his best to sustain the decision of the Runcorn magistrates. For this purpose he brought a pile of books into court, and quoted them as occasion served to confute and refute the several witnesses. There was Gmelin's "Chemistry," Garrod's "Materia Medica," Brande's "Dictionary," Muter's "Pharmaceutical Chemistry," and Attfield's "Manual," Cooley's book as edited by Brough, and a small library of other works. The argument drawn from these publications was three-fold. First, that sulphur præcipitatum contained no calcium sulphate; secondly, that lac sulphuris was a synonym of the pure article; thirdly, that the presence of the lime compound was a fraud or an adulteration introduced for the sake of profit. This was strong evidence to bring in open court, and it would have had greater weight had not the chairman, Mr. Horatio Lloyd, commenced with and repeated his observation that he wished to find

out from good evidence whether there were not two recognised and distinct preparations—one without lime sulphate, and one commonly known as milk of sulphur, in which lime was present; if so, he should rule that when milk of sulphur was required, and the lime compound sold, the vendor was justified in his act, while the buyer got the article he desired.

The answer to the heck argument is this: That the authors were not practical working pharmacists, and were unacquainted with the established trade usages of pharmacy; that that which had been for years ordered by authority could be classed neither as a fraud nor an adulteration; and that mere accumulation of evidence of this sort must be taken at its own value, for compilers have the reputation of largely copying from each other.

Messrs. Pound, Squire and Umney spoke as to the manufacture of two articles, distinct and separate, and demonstrated that the presence of the calcium sulphate was essential, or rather inevitable, in one of the two processes employed. It was certainly no fraud, nor was it either an admixture or adulteration.

Two witnesses gave evidence which carried conviction with the Bench, and to these two gentlemen the Trade Association and pharmacy are indebted for the victory they have won. The first was Mr. Baldock, whose examination headed the inquiry. With great simplicity and perfect calmness, he deposed that in his conduct of retail pharmacy he recognised two distinct preparations—sulphur precipitatum and lac sulphuris. The first was invariably supplied whenever indicated by the physician; the second, containing lime sulphate, was invariably supplied when milk of sulphur was asked for by the public. To sell the one for the other was in his opinion a mistake, and it was contrary to his usage.

Mr. Pemberton (who was examined last) spoke entirely as a physician. Those who were at Knutsford will not refuse their meed of admiration for the tact and the ability which he displayed, though they might have envied his manner and his incomparable self-possession. He deposed that during the course of a long and active professional career he had never but once prescribed any other than the lime compound known as milk of sulphur, under the designation of lac sulphuris. By lac sulphuris he meant sulphur precipitated with calcium sulphate. He preferred that preparation as being milder in its action, less irritating than sulphur precipitatum, more readily miscible in water, and distinctly more to be recommended in that class of disease in which its use was indicated. Mr. Pemberton added that had the chemist dispensed his prescription with the pure sulphur precipitatum he would have taken out an ingredient which he had specially intended to have been present in order to insure the true medical effect.

When asked by the chairman whether in that case he could not readily have framed his recipe so as to contain pure precipitated sulphur, with the subsequent addition of the due proportion of lime sulphate, he answered that that was a thing impossible, for that the compound must pass through a manufacturing process, so as to be produced in a beneficial form. This ended the discussion. The Bench retired for luncheon, and on their return, while Professor Redwood was standing in the witness box, the chairman said that the magistrates had come unanimously to the opinion that there were two distinct substances, known as sulphur precipitatum and lac sulphuris, and that this was borne out by the trade evidence and the medical testimony. The conviction was therefore quashed. Nevertheless, as the lac sulphuris did not appear in the British Pharmacopœia, the public analyst was justified in his procedure, and costs could not be allowed.

The Trade Association may be congratulated on their success, and it only remains to be regretted that by the sudden collapse of the indictment Professor Redwood was debarred from vindicating on scientific grounds the sale of a medicine which, having

been officially authorised, has continued to be supplied to all classes, rich and poor, from 1721 to the present moment.

* *

The quaint old city of Chester, with its Mediæval buildings, its ancient rows and Roman wall, is a spot which change seems to have forgotten, and where a railway is out of place. Stopping to admire the beauty of the wood carving of a façade, we saw next door, a name on a chemist's shop which we have known these many long years. It is hard to cherish sentiment with a grey sky overhead and the continuous drizzle of the rain, yet the name belonged to one who was associated with our school days at Bloomsbury, when Dr. Redwood, the Square, and pharmacy (ourselves included) were younger than we are now. Let us hope that as there was no grinding in those days, no short terms, no little shilling books to teach us chemistry, and no sensational delinquency of any kind—and as, moreover, the pillar post was open only for the distribution of letters, and not for chemical instruction—let us indulge the hope that we must have received a superior kind of education.

Changes have taken place since the day when the Chester student worked with his companions at the laboratory. George Fownes, conspicuous with a massive hat and in the frailty of weak health, gave admirable lectures on chemistry, omitting such experiments as his breathing was unable to endure. Pereira was there in the fulness of his strength, excellent and unapproachable in style and manner; and of our own expositor of pharmacy we may not speak, for, happily for a new generation, he is still amongst us. But when that new generation is tempted to laud the good old times to the disparagement of their own, let them recollect that our education was conducted in a cellar before the date of the Chappuis reflector; the store-room was an empty wine-bin, and no smell which the pursuit of chemistry involves was likely to be unappreciated. Occasionally on council mornings an especial *bromos*, which Dr. Attfield defines as a stink, would make its way unbidden into the hall of deliberation, and an irate councillor would descend the winding staircase with words of remonstrance and acerbation. That wretched, wriggling, stone corkscrew has not yet been removed. We had our great advantages—chiefly sets of evening lectures, which form the most valuable part of the earlier journals, and which we see with pleasure are to be re-inaugurated. But we had too much liberty, and we were allowed to smoke. It was in that underground academy that Dr. Edwards, then a diligent student, first made chloroform. We inhaled the compound, and tried how it tasted. The effect will not readily be forgotten—there was a brief fight and exhilaration; and when the perplexed professor arrived on the scene of action one of his respected pupils was found reposing on the sand-bath. The stern realities of life have toned down the exuberances of our youth: the friend from Liverpool, after some vicissitudes of fortune, has betaken himself to Canada, where he revives the traditions of the school; the friend from Chester has embarked upon manufacturing operations; the third friend has become a successful physician not unknown awhile at Earlswood; and the fourth endeavours to keep the even tenour of his way, and occasionally to write the records of his pharmaceutical experience in these notes called *Pharmacalia*.

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We may turn to a volunteer essay by Mr. John F. Hancock of Baltimore, for some brief but common-sense remarks on the position of the dispensing department in a pharmacy.

This formed one of the papers read at the seventh session of the American Pharmaceutical Association at Philadelphia.

Judging from the high character of the reports on pharmaceutical subjects with which we have become familiar, a sentence in Mr. Hancock's communication caused much surprise—"As a rule the best arrangements for conducting the prescription

business will not pay; consequently we find comparatively few pharmacies replete with conveniences in this department. On the contrary, it is not uncommon to find elaborately furnished establishments, and less attractive shops, where the soda cocktail and cigar departments have received more attention in cost of furniture and convenience of arrangement than the department for compounding prescriptions, and frequently they are looked to as the means of affording the larger share of trade profit." This we did not know, and it is the converse of the idea we had always entertained about American pharmacy.

English pharmacists have of late years paid extreme attention to the mechanical details of dispensing, and many of our larger firms are remarkable for the ingenuity and the completeness of the plans adopted. Druggists' fitters have found it to their interest to make the dispensing counter a speciality.

No rule can be given with regard to such arrangements, for they must be made to suit varied circumstances.

Mr. Hancock therefore deals with the position, not with the construction, of the dispensary. The grand point is on the one hand to avoid mistakes, and on the other to inspire confidence on the part of an anxious and waiting customer. We suggest that there is another consideration quite as material to the success of a dispensing house as it is essential to the comfort of the dispenser, namely, the establishment of a confidential sympathy and mutual understanding between the dispenser and the customer. When this is once set up, half, if not all, the minor difficulties of dispensing vanish. This explains the reason why the historic pharmacy is so preternaturally exempt from that vexatious interference which falls to the share of others.

There are three possible locations for the dispensing counter—either in the shop, with no special arrangement or separation, or banished to a distinct department and out of observation, or so contrived as to be within view and yet to be screened from unnecessary interruption. Most practical dispensers will agree with Mr. Hancock that this last is by far the best to be recommended.

To take the dispensary out of sight is not a thing desirable—either for the dispenser, who is moped to death by seeing nothing but prescriptions and by having no human element of interest in his work, or for the customer, who is dissatisfied with the proceeding. To make no distinction between the dispensing and the retail is a position to be accepted only as a necessity—which brings us to the third proposal, which is formulated thus:—

"We are convinced of the wisdom of the following modification in the average pharmacy—that the prescription department be arranged in a separate room, or on a rear counter, which shall be in full view of the front store, but sufficiently retired to prevent interruption, as by this means the over-anxious customer will have all fear allayed, and from the fact of being permitted to view the operation, time will not pass so tediously."

Our own dispensing creed includes these articles of faith:—

1. A slow dispenser is on an average a bad one.
2. A rapid dispenser is on an average a good one, because his quickness arises from varied practice, and a conscious sense of a knowledge of his business.
3. The errors due to external distraction are rendered infinitesimal by the force of habit.
4. The best chance for a dispensing establishment, subject to the purity of drugs, is a mutual understanding and personal intercourse between the patient and dispenser.
5. The rise of every great pharmacy with whose history we are acquainted has been due as much to the confidence reposed in its individual dispensers as to the excellence and character of its preparations.

We read with sorrow that Mr. George Morley Harrison, a well-known surgeon at Manchester, died suddenly under the

influence of nitrous oxide gas. He had suffered from tooth-ache, and the gas was administered for the tooth to be extracted. Unfortunately he had a heart disease, and the exhibition of the gas proved fatal. Mr. Harrison was fifty-two, and though such a result is, we believe, extremely rare, it is not the less to be regretted.

The Analyst, a monthly journal, has made its appearance under changed conditions. It is edited by Mr. Wigner and Dr. Muter, and while the Society of Public Analysts is no longer its proprietor, a certain number of pages will remain under the control of that association. We note the curious manner in which it drops down upon the poor chemist and druggist, and the mortal dread evinced lest he should turn out a respectable member of the community.

He has no milk to sell, save that of sulphur, and therefore he can neither skim nor water; but his adulteration figure "is nearly as high as the bakers', who expect a periodical visit from an inspector. This state of things is not as it should be." The remedy proposed is a more frequent examination of his goods, which are not inspected one-tenth as often as the urgency of the case requires. In the light of the events of the past month, we can return the compliment and reply that the samples of Pharmaceutical knowledge on the part of certain public analysts have been of an extremely doubtful character; nor have they been of the nature, substance, and quality of the article demanded.

If our trade honesty is to be so rigorously tested, let the standard of professional ability be raised. The President of the Society of Public Analysts made some cogent remarks upon the subject. Seeing that some of the confraternity had occasionally come to grief, it was suggested that before they gave adverse reports respecting a substance of which they had not much experience they should consult some better-educated brother, who might save them from distressing consequences. This aid is to be furnished free of charge, and the terms are arranged as follows:—"His (the President's) idea was that each member should state to the secretaries his willingness to always examine for any public analyst, free of charge, any article on which he had written or had made special researches, and in reference to which the public analyst proposed to return a certificate of adulteration." [*Analyst*, April, 1877, p. 17.] We think the plan a good one, and, under the circumstances, judicious.

The Pharmaceutical Council.

AT the meeting on April 4 all the members of the council were present except Messrs. Brown, Mackay and Rimmington. The list of nominations for council was read, and much regret was expressed at the determination announced by Mr. Frazer not to stand for re-election. Mr. Frazer said that domestic reasons prevented him from continuing at present to act as a member of council.

The proceedings were not of much general interest. The following were the subjects which occupied the attention of the council.

One of the annuitants of the Benevolent Fund had been guilty of misconduct, and it was proposed to remove his name from the list; but after a discussion it was decided not to take such an extreme measure at present.

The case of a co-operative store dispensing medicines containing poisons had been brought before the Law and Parliamentary Committee, and that committee had instructed the solicitor to obtain legal evidence of the infringement of the Act and report. We are not told what special circumstances characterise this case, nor whether it may be taken as the opening of the long-desired campaign against the apparently illegal practices of the stores.

The sub-committee appointed to consider amendments to the Pharmacy Act had prepared a report, but as that had not

passed through the Law and Parliamentary Committee's hands, it was considered not yet ripe for discussion.

Mr. Colegrove, who was lately convicted at the Central Criminal Court of passing his Preliminary Examination by proxy, had returned his Minor Examination certificate, and his name was now erased from the registers of chemists and druggists.

The society's bronze medal for chemistry and pharmacy and for botany and materia medica—the five months' course—were both awarded to Mr. Geo. Frederick Gutheridge.

The sum of 50*l.* was granted to the Bristol Pharmaceutical Association, and 5*l.* to the Oldham Assistants' and Apprentices' Association, for educational purposes. In returning thanks for the Bristol Association, Mr. Schacht said he had ascertained the proportion of registered persons in various towns who were connected with the society. In Manchester the proportion was 16 per cent. of those on the register; in Sheffield, 18 per cent.; Leeds, 19 per cent.; Hull, 22 per cent.; Liverpool, 23 per cent.; Bristol, 30·3 per cent.; London, 30·7 per cent. So that the difference between Bristol and London was only 4 per cent. Mr. Bottle remarked that the percentage seemed to be greater in small towns than in large towns. In Dover, where there were but fourteen or fifteen chemists, the society had about seven members.

A communication from the Hull Chemists' Association was read, directing the attention of the council to the habit of selling opium, solid and tincture, under cover of a patent medicine stamp, by persons not registered under the Pharmacy Act. The communication urged that the sale of patents containing any of the scheduled poisons should be confined to registered chemists and druggists. The subject was referred to the Law Committee.

A letter was read from a member of the trade, saying he was authorised by a friend to offer a donation of 100*l.* to the Benevolent Fund provided forty-nine other persons would contribute a like amount before the day fixed for the dinner in May next, or 50*l.* if ninety-nine others would contribute a similar amount, it being understood in either case that the sums be contributed in individual names, and not by firms, and that no larger amount be presented under any one name.

Subjoined is the list of candidates nominated for the council election in May. There will be fourteen vacant seats, for which there have been thirty-five nominations. The following twenty-three have signified their willingness to accept office if elected:—

Atherton, John Henry, Long Row, Nottingham.
 Baldon, Henry C., 73 Princes Street, Edinburgh.
 Betty, Samuel Chapman, 6 Park Street, Camden Town, N.W.
 Bottle, Alexander, 37 Townwall Street, Dover.
 Brown, William Scott, 113 Market Street, Manchester.
 Bulgin, William, 22 New Road, Gravesend.
 Churchill, Walter John, 46 New Street, Birmingham.
 Cracknell, Charles, 217 Edgware Road, W.
 Cubley, George Arthur, 4 High Street, Sheffield.
 Deane, James, 17 Pavement, Clapham Common, S.W.
 Gostling, Thomas Preston, Diss.
 Greenish, Thomas, 20 New Street, Dorset Square, N.W.
 Guyer, James Brett, 11 Strand, Torquay.
 Hampson, Robert, 205 St. John Street Road, E.C.
 Hanbury, Cornelius, Plough Court, Lombard Street, E.C.
 Richardson, John George Frederick, Friar Lane, Leicester.
 Rimmington, Felix Marsh, 9 Bridge Street, Bradford.
 Robbins, John, 372 Oxford Street, W.
 Shaw, John, 24 Great George Place, Liverpool.
 Stacey, Samuel Lloyd, 300 High Holborn, W.C.
 Vizer, Edwin Bennett, Church Road, Cliftonville, Brighton.
 Williams, John, 16 Cross Street, Hatton Garden, E.C.
 Wills, George Sampson Valontine, 62 Lambeth Road, S.E.

The following twelve nominees decline to accept office if elected:—

Andrews, Frederick, 23 Leinster Terrace, Hyde Park, W.
 Barclay, Thomas, 252 Moseley Road, Birmingham.
 Bell, Charles Bains, 6 Spring Bank, Hull.
 Cartelghe, Michael, 172 New Bond Street, W.
 Davenport, Horace, 33 Great Russell Street, W.C.
 Earle, Francis, 22 Market Place, Hull.
 Frazer, Daniel, 113 Buchanan Street, Glasgow.
 Hills, Walter, 238 Oxford Street, W.
 Morson, Thomas, 124 Southampton Row, W.C.
 Postans, Arthur William, 35 Baker Street, W.
 Reynolds, Richard, 13 Briggate, Leeds.
 Squire, Peter Wyatt, 277 Oxford Street, W.

The following five members have been nominated for election

as auditors, and have declared their willingness to accept office if elected:—

Andrews, Frederick, 23 Leinster Terrace, Hyde Park, W.
 Barron, Frederick, 2 Bush Lane, Cannon Street, E.C.
 Hodgkinson, William, 127 Aldersgate Street, E.C.
 Horner, Edward, 20 Bucklersbury, E.C.
 Squire, William, 5 Coleman Street, E.C.

The Chemists' and Druggists' Trade Association.

At a joint meeting of the Law and Finance Committees, held at the office of the association, 23 Burlington Chambers, New Street, Birmingham, on March 16, the following resolutions were unanimously passed:—

Moved by the PRESIDENT, seconded by Mr. HAMPSON, and resolved:—

That the solicitor be instructed to take all necessary steps to appeal against the decision in the case of the Apothecaries' Company v. Shepperley.

Moved by Mr. SOUTHALL, seconded by Mr. CHURCHILL, and resolved:—

That the solicitor be directed to instruct two leading counsel and a junior to undertake the argument on the appeal.

Moved by Mr. BARCLAY, seconded by Mr. CHURCHILL, and resolved:—

That a full report of Mr. Shepperley's case be printed and circulated to each chemist and druggist in Kelly's "Chemists' Directory."

Moved by Mr. BARCLAY, seconded by Mr. CHURCHILL, and resolved:—

That the solicitor be instructed to write to the Apothecaries' Company calling their attention to the fact that other proceedings in their name are threatened, and requesting them to withhold their authority from all such proceedings until the legal status of chemists and druggists under the Apothecaries Act, 1815, is determined by an appeal to the Queen's Bench Division of the High Court of Justice against the decision in Mr. Shepperley's case.

Moved by Mr. HAMPSON, seconded by Mr. BARCLAY, and resolved:—

That the secretary be instructed to collect further evidence of infringements of the Pharmacy Act, 1868, and to forward the same to the Registrar of the Pharmaceutical Society.

THE NOTTINGHAM PRESCRIBING CASE.

WHAT OTHERS THINK.

THE *Medical Press* of March 21 says:—"The case is fairly representative of counter-practice as it is carried on by hundreds of druggists in England, and the circumstances are as favourable to them as those of any case in which the Medical Defence Association is likely to interfere, and it is, therefore, a favourable chance for the chemists to test the feeling of the higher judge. If the appeal be prosecuted we certainly look to the profession in England to do as much as the druggists are ready to do in finding money for the determination of the question. The Medical Defence Association is fighting the battle of the general practitioners, and fighting it with energy and skill. It may be forced to carry the campaign into an expensive arena, and ought not to lose the engagement for want of ammunition or the supplies which those it fights for are bound to bring to the scene of action. The medical profession does not desire to make profit out of a doubt as to the legality of counter-prescribing, but, on the contrary, feeling that the legality of medical practice ought to be decided and set at rest, is willing to abide by the opinion of the judges and the public on the matter. It will be for the benefit of all parties that the chemists shall establish their right to doctoring if they can, and, if not, that they shall be forced to confine themselves to such line of trade as their education entitles them to pursue."

The *Lancet* of March 24 says:—"It is satisfactory to know

that judgment was given for the plaintiffs, and a penalty of 20*l.* inflicted. Encouragement is thus afforded to the Medical Defence Association in their efforts to suppress unqualified medical practice, which is as dangerous to the public as it is opposed to the interests of the medical profession. We wish we could hear of similar prosecutions in South London, where the large proportion of uncertified deaths indicates a considerable amount of irregular medical practice."

The *British Medical Journal* and *Medical Times and Gazette* have briefly reported the case, but without comment. The *Students' Journal*, which, as we have before said, is a sort of organ for the London Medical Defence Association, has an article in its issue of March 31, pleasantly entitled, "The Chemists at Bay." The writer is not sorry to hear that the chemists intend to fight the question, so as to clear up any doubts that may exist as to their legitimate province, but will be very much surprised if the High Court of Justice pronounce in their favour. This authority boldly adds: "The question has been argued times almost without number, with one invariable result. The chemists argue that, as long as they prescribe for patients only in their own shops, they do not infringe this Act, but they readily admit that were they to do so at the patients' homes they would render themselves liable to the penalty. This is a subtle distinction which, we venture to think, would only present itself to the mind of a chemist. If the act of 'prescribing' medicines by unqualified persons is illegal, it matters not whether it is committed in the chamber of the patient, in the consulting room, over the shop counter, or in the street; neither does it matter whether the disease is a simple or a grave one, or the remedies prescribed simple or potent. If such points as these were admitted, it would be impossible to draw a line as to where legal prescribing ends and illegal begins."

We are sorry that our space forbids long quotations from the *Nottingham Journal*, in which a large number of letters have appeared showing the astonishment of the public at the cool assumptions of their doctors. The *Nottingham Journal* concludes an able editorial article with these words:—"It may be illegal for a chemist to prescribe over the counter for ordinary ailments—in dealing with which common-sense and experience are more valuable than deep medical skill—but it is absurd to expect that the public will go to anybody else for consultation on such matters as sore throats, toothache, headache, &c. There is a common line to draw, and if the Defence Association had drawn it at visitation, and prosecuted upon a case of that description, they would have done well and elicited some sympathy, but at present they show their weakness by having to call in an absurd Act to support them, when, one would think, the profession would have held its place by its own inherent vitality and force. Doctors have a right to defend themselves, and, as they say, the public, but they must not make themselves look ridiculous and incompetent by fighting common-sense."

PHARMACEUTICAL SOCIETY OF IRELAND.

THE monthly meeting of the council of the above society was held at the College of Physicians, Kildare Street, Dublin, on Wednesday, April 4, Sir D. J. Corrigan, M.D., Bart., president, in the chair. The following were present:—Dr. A. Smith, vice-president, Mr. Wm. Allen, Dr. Collins, Mr. J. Goodwin, Mr. Wm. Hayes, Mr. E. M. Hodgson, Mr. J. T. Holmes, Mr. S. Oldham, Sir G. B. Owens, Mr. Payne (Belfast), Mr. Pring (Belfast), Dr. Ryan, and Professor Tichborne.

The first business on the notice paper was to read a communication from Mr. Henry Robinson, clerk to the Privy Council, stating that some bye-laws had been approved of.

A letter was read from Mr. B. Banks, secretary to the Local Government Board, informing the council that a circular had been forwarded to clerks of unions throughout Ireland, directing attention to the sections of the Pharmacy Act which relate to the employment of pharmacists in workhouses and dispensaries:—

Section 30 enables persons duly registered under the Act to dispense or compound medical prescriptions; section 33 provides that registration under the Act shall not entitle any person so registered to practise medicine or surgery; and section 34 provides that any person registered as a pharmaceutical chemist under the Act shall be qualified to be appointed to and to hold the office of apothecary in any district lunatic asylum, county gaol, or prison in Ireland, but expressly provides that such person shall not be entitled to prescribe for patients.

Having regard to these provisions the Local Government Board are of opinion that, where the compounding of medicines and prescriptions is wished to be separately provided for, a duly registered pharmaceutical chemist under the Act may be permitted to act in that capacity for workhouses and dispensaries.

The committee appointed to draw up a chart of the doses of dangerous medicines submitted a proof. The list of preparations was carefully gone through by the council, and several alterations made. The committee were requested to submit a proof in its amended form at the next meeting.

The following were admitted to membership:—John P. Cavanagh, 12 Grafton Street, Dublin; William Marshall, 9 Duggan Place, Rathmines; John G. P. Whitford, Clonliffe Parade, Dublin.

A special examination was held at the College of Physicians, Kildare Street, on Wednesday and Thursday, the 28th and 29th ult. Twenty-seven candidates presented themselves for examination. Fourteen failed: the following were successful:—

Richard Darley A. Atkinson, Dublin	Charles Henry Griffin, Sandymount
George David Beggs, Dublin	George Hardy, Tandragee
John Bronte, Dromore, Co. Down	Samuel M'Kinney, Portadown
Alexander Chapman, Belfast	Fredk. Meyers, Kingstown
John Dillon Crinion, Dublin	Edward Peter Murray, Clones
Frederick William Devlin, Belfast	Alexander John Paterson, Dublin
	James Tate, Belfast

The quarterly Preliminary examination was held on Monday, April 2. Fifteen candidates were examined; fourteen passed, viz:—

Thomas Batt, jun., Dublin	Robert M'Elvie, Rathmines Road
Alex. James Boyd, Loughlinstown	Joseph Henry Malone, Dublin
Henry Bruce, Dublin	Charles Stephen A. Mossop, Dublin
William Connor, Lisburn	Robert O'Halloran, Limerick
George Diamond, Dublin	Michael Joseph O'Reilly, Dublin
Charles R. Faris, Dublin	Henry Osborne Reilly, Armagh
David William Kennedy, Monaghan	W. L. Ross, Limerick

The quarterly examination for the license of pharmaceutical chemist was held on Wednesday, April 4. Three candidates were examined and passed, viz:—

John Blair, Cork
Samuel John Conolly, Athy
James Robinson, Belfast

EVENING MEETING.

The third evening meeting of this society was held on April 3 at the College of Physicians. There were 30 members present. The chair was taken at 8 o'clock by Dr. Aquilla Smith. The hon. secretary, Professor Tichborne, having read the minutes, Dr. E. Davy was called upon to read his paper,

ON THE APPLICATION OF THE MOLYBDENUM TEST TO CERTAIN ADULTERATIONS OF ESSENTIAL OILS.

This test is based on the observation that when a solution of molybdic acid in sulphuric acid is brought into contact with alcohol there is quickly developed a deep blue colouration. Most reducing reagents produce this azure blue colour.

The author had found it particularly useful in determining the presence of alcohol in essential oils. The test was readily applied, and the essential oils generally adulterated with alcohol were some of the most expensive. The oils themselves produce this blue reaction, but water which had been in contact with them for some time, and was, therefore, supposed to be saturated with the oils, did not do so. They only gave a slight yellow colouration on warming. A sample of the suspected oil was placed in a peculiar test tube. This test tube was so constructed that the end was open, but drawn out to a fine point like a pipette. The end was closed with the finger, and the oil poured in with its own volume of water. An indiarubber cork was then inserted, and the whole was well mixed by shaking. It was then placed on one side until the oil had separated. A few drops of the water were then allowed to fall on to the sulphomolybdic acid, slightly warmed in a white capsule, when if the oils contained alcohol the blue colour immediately appeared.

If the essential oils under examination are heavier than water, a little sulphate of sodium should be added, so that the aqueous solution might fall to the bottom. The oils that had been experimentally tried and worked well with this reagent were rose geranium, otto of roses, volatile oil of mustard, neroli, rhodium, and a few others of the less expensive kind, including lavender.

The temperature employed in these tests should not exceed 212° Fahr. The blue compound formed in the case of alcohol

of the Medicis was also that of the Borgias, and although we need not accept without question all the stories of contemporary historians, who abandoned themselves too much to the passion of the moment, we must believe that the "poison of the Borgias" was not a mere invention of the illustrious romancists and dramatists of that age.

In a country where the art of poisoning was an inheritance, touching adventures and frightful catastrophes were produced. If, indeed, the loves of Romeo and Juliet, like the narcotic of Friar Lawrence, belong to legend, history records in almost every city hereditary feuds between noble families which were carried to the extreme of bitterness when political competitions were added to personal rivalries. With such clients the art of preparing poisons, of dissimulating them under a seductive form, and of administering them with skill, must have rapidly reached perfection. We may discover proof of the progress which had been made in this frequently criminal branch of the pharmaceutical art if we open a book, very celebrated in its day, and still read with interest—the "Natural Magic" of Giambattista Porta. This teacher was the founder of an academy which Pope Paul IV. suppressed for the alleged reason that in it were taught "the illicit arts," though its avowed object was the discovery of medical knowledge.

Porta's "Natural Magic," notwithstanding the rhetorical reticences and precautions of its author, was neither more nor less than a treatise on toxicology. Porta insists on the power of the narcotics which he enumerates, and he distinguishes three degrees in their action—narcotisation, sudden insanity, and death. By slightly exceeding the dose of the philter destined simply to produce narcotisation, the patient falls into hallucination, has strange visions, and believes himself transported into a world of marvels. Double the dose, and the delirium is quickly soothed by death.

In a chapter devoted to cookery, Porta says that these hallucinations may be obtained by henbane, belladonna, or stramonium reduced to powder and mixed with food, and that they are sometimes marked by the most curious effects. Under their influence the associates of a dinner party may be made to believe themselves changed into beasts: they will seem to eat grass like the oxen, swim like seals, and dive like ducks in a pond. By administering as an appetite sharpener three hours before a meal a dose of wine in which belladonna root has been infused, it is possible to renew the punishment of Tantalus, causing the victim to be in the presence of the most tempting dishes and wines, but able neither to eat nor to drink. But he adds this is a dangerous amusement, for the poisonous principle of belladonna, atropine, may easily go beyond the mere prevention of the power of swallowing, and the smallest oversight on the part of the administrator may lead to fatal results. Certainly, if all cooks were trained in Porta's system they would well deserve the title of poisoners which he bestows on them. Fortunately, however, if there is much bad cooking and many unscrupulous restaurateurs, there are also true artists in this profession, and the reputation of France in this respect has not to be made.

Book II. of Porta's work treats of "magical unction," by which he professes the human body may be freed from its material bonds, and be endowed with a marvellous power of aerial locomotion, finding itself in a few instances transported into the midst of the strange scenes of the East. This is clearly a reminiscence of the "Golden Ass," and had been already described by Cardan; only Porta makes the *solanum somniferum* the base of this magic unction, while Cardan gives henbane and opium as its ingredients.

Another *savant* of this epoch, Andrew Laguna, physician to Pope Julius III., relates a fact which may to some extent serve to explain these singular phenomena of hallucination. Having obtained from a *soi-disant* sorcerer a marvellous pomade of the character we have described, he applied it to a woman afflicted with an incurable sleeplessness: the remedy acted so effectually that the patient slept for thirty-six hours in succession, and so agreeably that she believed she saw all the while joyous dances and listened to a melodious concert of flutes and tambourines.

Thus, by skilfully varying the narcotic herbs, and administering them sometimes internally, sometimes externally, a range of effects might be produced, from the warlike enthusiasm of the "assassins," so well known to the Crusaders, to the tipsy dreams of the Haschisch amateurs. In a most interesting investigation on the Nephethes of Homer by M. Virey, in the *Bulletin de Pharmacie*, vol. v. (1818), page 49, the author believes he has been able to trace the essential substance of these philters and

narcotic pomades to the *Hyoscyamus Datura* of Forskal, which is still used in Egypt and the East for similar compounds.

Porta also applies his toxicological combinations to the art of the Fowler. To take birds he orders little balls of the size of a nut to be made of a mixture of wolfsbane leaves, powdered glass, quicklime, orpiment, bitter almonds, and honey. But if he did so much to spread in Italy an acquaintance with methods of poisoning, it is only fair to him to recognise the care with which he described the effects of many vegetable substances from which the medicine of the present day obtains some of its most precious remedies. We are indebted to him also for the not less scrupulous attention with which he investigated and formulated the antidotes to those deadly substances which he discusses with an incontestable talent.

From Italy to the France of the last of the Valois the transition is quite natural: several causes had served to bring the two nations into communication. Repeated wars had compelled many Frenchmen to sojourn in Italy during the occupations of Milan and of Naples; many Italians in the train of their princesses who married our kings had settled in France. Thus a fashionable taste for the arts of Italy was created, and magicians, astrologers, and perfumers were not the last to profit by the favour of the court and of the public. But all the practitioners of these arts were not born beyond the Alps. If the most celebrated, such as Réué the Florentine and Cosmos Ruggieri, the favourites, and some say the auxiliaries of Catherine de Medici, were of Italian birth, they had large numbers of native imitators. L'Estoile, in his journal for the year 1587, describes the punishment of a witch named La Miraille, and he incidentally mentions that the number of sorcerers and other vermin of the same class had so increased under Charles IX., thanks to the troubles of the kingdom and the connivance of the authorities, that their chief confessed to have had as many as 30,000 associates in his art in Paris alone in the year 1572. However exaggerated this figure may be, it yet serves to show how the arts of magic flourished on the popular credulity, and how the religious wars of the period had favoured the development of a dangerous and guilty science. At that period sorcerers, magicians, astrologers, and witches were merely poisoners. The judgment of the people is often correct, and whenever an unexpected death happened they attributed it to the criminal practices of these dangerous accomplices. That of Charles IX. was credited to Ruggieri, whom the queen mother could only with difficulty save from the scaffold; that of Jeanne d'Albret was believed to be due to René the Florentine, the perfumer of her enemy.

And *à propos* of this last death we may here allude to an error which has been propagated by legend, and which certain historians have too lightly accepted as a truth. The Queen of Navarre died, not from wearing perfumed gloves, but from eating poisoned confectionery. After her reconciliation with the Court, says a contemporary, "she was presented with some Italian comfiture, under pretence of affection, of which, after tasting, she fell ill on her bed, and five days afterwards yielded her soul to God."

Arsenic, in the form of an impalpable powder, was the deadly ingredient of these sweets and perfumes. The skill of those who combined those perfidious compounds had become so great that nothing revealed the presence of this terrible poison, and very often the death of the victim seemed due to natural causes. No wonder, therefore, that the chief physicians of the period should have concentrated their attention on arsenic.

Ambrose Paré, the most illustrious of them all, had in 1536 as a surgeon followed the French army into Italy, and there he had studied the Ultramontane medical practice. He devoted a chapter of his great work (ch. 45 of book 21) to arsenical poisoning. He describes the symptoms, discusses carefully the antidotes: he gives the preference to treacle taken in Malvoisie wine. But Paré, faithful to the orders of Hippocrates, does not approach this subject without hesitation; the general interest, however, conquers his scruples. "If I write on poisons," he says, "it is only out of the desire I have, and always shall have, to serve God and the public, and I protest against the accusation which some have made against me of any intention of teaching to do evil. I would that all inventors of poisons had perished in their mother's wombs." "Poisons," he adds "have been invented by the artifices and sublimations of wicked traitors and perfumers, who ought to be driven from the kingdom of France with Turks and infidels."

Ambrose Paré had but a very slight confidence in the pretended counter-poisons of the Spaniards, and it may not be

without interest to quote the following experiment which he tells us was made at Clermont-Ferrand:—

"The king, lately deceased, being in his town of Clermont in Auvergne, a nobleman brought to him from Spain a Bezarhar stone, which he declared was good against all poisons, and was greatly esteemed. Being myself at the time in the rooms of the king, he called me and asked me if there was any certain and simple drug which could be good against every poison. I told him there was not, saying that there were various sorts and kinds of poisons, some of which might be taken internally and others externally. I showed him that the effects of poisons were not all of one kind, and that those effects did not proceed from the same causes, some acting by the excess of the elementary qualities which they contain, others by their specific, occult, and secret properties, not subject to any reason. According to their diversity so must they be opposed; as, for example, if they were hot they must be cured by cold remedies, the cold by hot remedies, and so forth. The nobleman who brought the stone, however, maintained against my reasoning that it was effectual against all poisons. Then I said to the king that there was a good opportunity of making a certain experiment on a criminal who was about to be hung. M. de la Trousse, the provost, was quickly sent for, and asked if he had anyone who had merited the cord. He answered that he had in his prison a cook who had stolen two silver dishes from his master, and that he was to be hanged and strangled the next day. The king said he wanted to make an experiment with a stone which was said to be very good against all poisons, and that he wished to know if the said cook, being condemned, would be willing to take a poison and some of this counter-poison immediately after, and that if he escaped his life should be spared. To this the cook agreed, saying that he would rather die of poison in the prison than be strangled in public. An apothecary, therefore, to the king's service, soon after this gave him a certain poison in a draught, and immediately afterwards he took some of the said Bezarhar stone. With these two good drugs in his stomach he began to vomit, and soon he went to the seat with violent pains, saying that he had a fire in his body, and asking for water to drink, which was not refused. I asked the Count de la Trousse to allow me to see the cook, and he sent me to him with three archers. I found the poor wretch on all fours like a beast, with his tongue hanging out of his mouth, his eyes glaring, and continually trying to vomit, with thick cold sweats, and blood flowing from his ears, nose, mouth, arms, &c. I made him drink some oil, hoping thereby to relieve him, and perhaps save his life, but it was too late, for he soon died, protesting that he would rather have been hung. He lived about seven hours after taking the poison, and when he was dead I opened him in the presence of the Count de la Trousse and four of his archers. His lower bowels were black and dry as if they had been cauterised, whereby I perceived that he had taken sublimate. This experiment having demonstrated that the Spanish stone had no virtue, the king commanded that it should be thrown into the fire, which was done."

How many of the vaunted panaceas even of our own times, accepted with a blind faith by our country populations, would bear a crucial experiment of this sort. It is the honorable duty of the medical profession to unmask impostures, and to put poor sufferers on their guard against the seductive but sterile promises of charlatans. And let us add that the most numerous and the most dangerous charlatans are not those that we see dressed up like generals in our public squares.

According to Ambrose Paré, the only effectual counter-poisons are cordials. No doubt a generous wine, or a tonic liqueur, may sometimes restore to the stomach its shattered forces, and help it to resist more energetically the enemy which attacks it. For the same purpose Paré also recommends bleeding.

More fortunate than the cook of whom Paré speaks was a Bohemian who lived through a similar experiment. The object was to test the virtue of a mysterious substance called Ferdinand's Powder, after Ferdinand, Archduke of Austria. Mathioli of Sienna, the physician to that prince, thus relates the facts:—A man condemned to be hanged accepted a proposition made to him by order of the Archduke to be experimented on with arsenic. They made him swallow two grains of the poison. In four hours he was livid, prostrate, and, as the doctors thought, in his death agonies. They gave him a dose of the powder in some white wine; relief at once set in. He recovered rapidly: the next day he was perfectly well, and was set at liberty.

We believe that the curative effects related by Mathioli in this and in other analogous cases were due rather to the wine than to the powder; the virtue of the latter, we imagine, lay in the fact that it was so inert as not in any way to neutralise the force of the liquid.

A contemporary of Mathioli, the physician Cesalpin, mentions a method which he says was widely adopted by the nobility of his epoch to guard against poison mixed in the food. It consisted in having all dishes served in vessels of electrum, a metal very similar in composition to our vermeil (silver gilt), of the colour of amber, from which fact it derived its name. Cesalpin says the contact of a poisonous substance would tarnish this metal. Certain precious stones were also employed in a like manner. It was believed that by dipping them into culinary preparations they would reveal the presence of poison by a loss of their natural transparency. Perhaps we have here the origin of the not very conclusive experiment, which is still adopted by a good many housekeepers, of assuring themselves of the wholesomeness of musbrooms by stirring them with a silver spoon.

Though Paré discussed poisons incidentally he was especially a surgeon. But the man who in the sixteenth century advanced the science of toxicology the most was Jerome Mercurialis de Foï. Maximilian II., cured by him of a serious disease, created him Count Palatine; but Mercurialis, careless of honours, after having for some time been Professor at Padua, withdrew to his native town, and there continued to write his important works. That which he composed on poisons attests both his erudition and his sagacity. He divided it into two parts: the first treats on generalities, the second gives the detailed description of each poison in particular. He defines poisons thus: *Veneria sunt medicamenta mortalia*, and then he quotes from Aristotle that they are distinguishable from ordinary medicines by acting in infinitesimal doses. He goes on to say that "their action is a mystery, like the attraction of the magnet, the burning of fire, the principle of light." Do we know much more now, notwithstanding all the surprising revelations of chemistry? Can we, for example, explain satisfactorily why the toxic force of arsenic, itself an inoffensive metal, should increase or diminish according to its mixture with oxygen, that gas so necessary to our existence? In what mysterious manner does the combination become so deadly? Treating on the utility of poisonous substances, Mercurialis quotes an ironical passage from Pliny, who says they are the means provided by nature whereby infamous individuals may promptly disembarrass society of their personalities.

Mercurialis divides poisons into two classes—the hot and the cold. The first, he says, kill by augmenting the caloric and inflaming the organism; the second by absorbing the natural warmth of the body. He does not admit with Avicenna that poisons act invariably on the heart, but he agrees with the learned Arab that they penetrate into the organism by absorption: the empty organs, he says, pump up, so to speak, the poison. Is there not in this rather obscure language a vague intimation of the *endosmose*, the laws of which M. Dutrochet has in our days so ably traced? He condemns bleeding, "because emptying the vessels facilitates the absorption of poisonous substances and accelerates their action." For poisons taken by the mouth he recommends the prompt expulsion of the substance by vomiting, wine, sweats, &c., and the neutralisation of their effects by means of milk. He considers emetics the most certain treatment, because it is most desirable that poisons should be ejected by the way they entered; but he particularly objects to the employment of hellebore as an emetic in any case. The victim is to be kept roused so long as symptoms of intoxication continue. Sleep at such a time, says our author, "is deceptive: it is often the result of the asthenia, and produces a sort of asphyxia which paralyses the action of medicines, whilst the poison glides more easily into the veins during the repose of sleep." In treating of arsenious acid he indicates as antidotes wine of wormwood, opiated wine, camellia infused in wine, and such-like remedies.

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of the Medicis was also that of the Borgias, and although we need not accept without question all the stories of contemporary historians, who abandoned themselves too much to the passion of the moment, we must believe that the "poison of the Borgias" was not a mere invention of the illustrious romancists and dramatists of that age.

In a country where the art of poisoning was an inheritance, touching adventures and frightful catastrophes were produced. If, indeed, the loves of Romeo and Juliet, like the narcotic of Friar Lawrence, belong to legend, history records in almost every city hereditary feuds between noble families which were carried to the extreme of bitterness when political competitions were added to personal rivalries. With such clients the art of preparing poisons, of dissimulating them under a seductive form, and of administering them with skill, must have rapidly reached perfection. We may discover proof of the progress which had been made in this frequently criminal branch of the pharmaceutical art if we open a book, very celebrated in its day, and still read with interest—the "Natural Magic" of Giambattista Porta. This teacher was the founder of an academy which Pope Paul IV. suppressed for the alleged reason that in it were taught "the illicit arts," though its avowed object was the discovery of medical knowledge.

Porta's "Natural Magic," notwithstanding the rhetorical reticences and precautions of its author, was neither more nor less than a treatise on toxicology. Porta insists on the power of the narcotics which he enumerates, and he distinguishes three degrees in their action—narcotisation, sudden insanity, and death. By slightly exceeding the dose of the philter destined simply to produce narcotisation, the patient falls into hallucination, has strange visions, and believes himself transported into a world of marvels. Double the dose, and the delirium is quickly soothed by death.

In a chapter devoted to cookery, Porta says that these hallucinations may be obtained by henbane, belladonna, or stramonium reduced to powder and mixed with food, and that they are sometimes marked by the most curious effects. Under their influence the associates of a dinner party may be made to believe themselves changed into beasts: they will seem to eat grass like the oxen, swim like seals, and dive like ducks in a pond. By administering as an appetite sharpener three hours before a meal a dose of wine in which belladonna root has been infused, it is possible to renew the punishment of Tantalus, causing the victim to be in the presence of the most tempting dishes and wines, but able neither to eat nor to drink. But he adds this is a dangerous amusement, for the poisonous principle of belladonna, atropine, may easily go beyond the mere prevention of the power of swallowing, and the smallest oversight on the part of the administrator may lead to fatal results. Certainly, if all cooks were trained in Porta's system they would well deserve the title of poisoners which he bestows on them. Fortunately, however, if there is much bad cooking and many unscrupulous restaurateurs, there are also true artists in this profession, and the reputation of France in this respect has not to be made.

Book II. of Porta's work treats of "magical unction," by which he professes the human body may be freed from its material bonds, and be endowed with a marvellous power of aerial locomotion, finding itself in a few instances transported into the midst of the strange scenes of the East. This is clearly a reminiscence of the "Golden Ass," and had been already described by Cardan; only Porta makes the *solanum somniferum* the base of this magic unction, while Cardan gives henbane and opium as its ingredients.

Another *savant* of this epoch, Andrew Laguna, physician to Pope Julius III., relates a fact which may to some extent serve to explain these singular phenomena of hallucination. Having obtained from a *soi-disant* sorcerer a marvellous pomade of the character we have described, he applied it to a woman afflicted with an incurable sleeplessness: the remedy acted so effectually that the patient slept for thirty-six hours in succession, and so agreeably that she believed she saw all the while joyous dances and listened to a melodious concert of flutes and tambourines.

Thus, by skilfully varying the narcotic herbs, and administering them sometimes internally, sometimes externally, a range of effects might be produced, from the warlike enthusiasm of the "assassins," so well known to the Crusaders, to the tipsy dreams of the Haschisch amateurs. In a most interesting investigation on the Nephenthes of Homer by M. Virey, in the *Bulletin de Pharmacie*, vol. v. (1818), page 49, the author believes he has been able to trace the essential substance of these philters and

narcotic pomades to the *Hyoxyamus Datura* of Forskal, which is still used in Egypt and the East for similar compounds.

Porta also applies his toxicological combinations to the art of the fowler. To take birds he orders little balls of the size of a nut to be made of a mixture of wolfsbane leaves, powdered glass, quicklime, orpiment, bitter almonds, and honey. But if he did so much to spread in Italy an acquaintance with methods of poisoning, it is only fair to him to recognise the care with which he described the effects of many vegetable substances from which the medicine of the present day obtains some of its most precious remedies. We are indebted to him also for the not less scrupulous attention with which he investigated and formulated the antidotes to those deadly substances which he discusses with an incontestable talent.

From Italy to the France of the last of the Valois the transition is quite natural: several causes had served to bring the two nations into communication. Repeated wars had compelled many Frenchmen to sojourn in Italy during the occupations of Milan and of Naples; many Italians in the train of their princesses who married our kings had settled in France. Thus a fashionable taste for the arts of Italy was created, and magicians, astrologers, and perfumers were not the last to profit by the favour of the court and of the public. But all the practitioners of these arts were not born beyond the Alps. If the most celebrated, such as René the Florentine and Cosmos Ruggieri, the favourites, and some say the auxiliaries of Catherine de Medici, were of Italian birth, they had large numbers of native imitators. L'Estoile, in his journal for the year 1587, describes the punishment of a witch named La Miraille, and he incidentally mentions that the number of sorcerers and other vermin of the same class had so increased under Charles IX., thanks to the troubles of the kingdom and the connivance of the authorities, that their chief confessed to have had as many as 30,000 associates in his art in Paris alone in the year 1572. However exaggerated this figure may be, it yet serves to show how the arts of magic flourished on the popular credulity, and how the religious wars of the period had favoured the development of a dangerous and guilty science. At that period sorcerers, magicians, astrologers, and witches were merely poisoners. The judgment of the people is often correct, and whenever an unexpected death happened they attributed it to the criminal practices of these dangerous accomplices. That of Charles IX. was credited to Ruggieri, whom the queen mother could only with difficulty save from the scaffold; that of Jeanne d'Albret was believed to be due to René the Florentine, the perfumer of her enemy.

And *à propos* of this last death we may here allude to an error which has been propagated by legend, and which certain historians have too lightly accepted as a truth. The Queen of Navarre died, not from wearing perfumed gloves, but from eating poisoned confectionery. After her reconciliation with the Court, says a contemporary, "she was presented with some Italian confiture, under pretence of affection, of which, after tasting, she fell ill on her bed, and five days afterwards yielded her soul to God."

Arsenic, in the form of an impalpable powder, was the deadly ingredient of these sweets and perfumes. The skill of those who combined those perfidious compounds had become so great that nothing revealed the presence of this terrible poison, and very often the death of the victim seemed due to natural causes. No wonder, therefore, that the chief physicians of the period should have concentrated their attention on arsenic.

Ambrose Paré, the most illustrious of them all, had in 1536 as a surgeon followed the French army into Italy, and there he had studied the Ultramontane medical practice. He devotes a chapter of his great work (ch. 45 of book 21) to arsenical poisoning. He describes the symptoms, discusses carefully the antidotes: he gives the preference to treacle taken in Malvoisy wine. But Paré, faithful to the orders of Hippocrates, does not approach this subject without hesitation; the general interest, however, conquers his scruples. "If I write on poisons," he says, "it is only out of the desire I have, and always shall have, to serve God and the public, and I protest against the accusation which some have made against me of any intention of teaching to do evil. I would that all inventors of poisons had perished in their mother's wombs." "Poisons," he adds, "have been invented by the artifices and sublimations of wicked traitors and perfumers, who ought to be driven from the kingdom of France with Turks and infidels."

Ambrose Paré had but a very slight confidence in the pretended counter-poisons of the Spaniards, and it may not be

without interest to quote the following experiment which he tells us was made at Clermont-Ferrand:—

"The king, lately deceased, being in his town of Clermont in Auvergne, a nobleman brought to him from Spain a Bezarar stone, which he declared was good against all poisons, and was greatly esteemed. Being myself at the time in the rooms of the king, he called me and asked me if there was any certain and simple drug which could be good against every poison. I told him there was not, saying that there were various sorts and kinds of poisons, some of which might be taken internally and others externally. I showed him that the effects of poisons were not all of one kind, and that those effects did not proceed from the same causes, some acting by the excess of the elementary qualities which they contain, others by their specific, occult, and secret properties, not subject to any reason. According to their diversity so must they be opposed; us, for example, if they were not they must be cured by cold remedies, the cold by hot remedies, and so forth. The nobleman who brought the stone, however, maintained against my reasoning that it was effectual against all poisons. Then I said to the king that there was a good opportunity of making a certain experiment on a criminal who was about to be hung. M. de la Trousse, the provost, was quickly sent for, and asked if he had anyone who had merited the cord. He answered that he had in his prison a cook who had stolen two silver dishes from his master, and that he was to be hanged and strangled the next day. The king said he wanted to make an experiment with a stone which was said to be very good against all poisons, and that he wished to know if the said cook, being condemned, would be willing to take a poison and some of this counter-poison immediately after, and that if he escaped his life should be spared. To this the cook agreed, saying that he would rather die of poison in the prison than be strangled in public. An apothecary, therefore, in the king's service, soon after this gave him a certain poison in a draught, and immediately afterwards he took some of the said Bezarar stone. With these two good drugs in his stomach he began to vomit, and soon he went to the seat with violent pains, saying that he had a fire in his body, and asking for water to drink, which was not refused. I asked the Count de la Trousse to allow me to see the cook, and he sent me to him with three archers. I found the poor wretch on all fours like a beast, with his tongue hanging out of his mouth, his eyes glaring, and continually trying to vomit, with thick cold sweats, and blood flowing from his ears, nose, mouth, arms, &c. I made him drink some oil, hoping thereby to relieve him, and perhaps save his life, but it was too late, for he soon died, protesting that he would rather have been hung. He lived about seven hours after taking the poison, and when he was dead I opened him in the presence of the Count de la Trousse and four of his archers. His lower bowels were black and dry as if they had been cauterised, whereby I perceived that he had taken sublimate. This experiment having demonstrated that the Spanish stone had no virtue, the king commanded that it should be thrown into the fire, which was done."

How many of the vaunted panaceas even of our own times, accepted with a blind faith by our country populations, would bear a crucial experiment of this sort. It is the honorable duty of the medical profession to unmask impostures, and to put poor sufferers on their guard against the seductive but sterile promises of charlatans. And let us add that the most numerous and the most dangerous charlatans are not those that we see dressed up like generals in our public squares.

According to Ambrose Paré, the only effectual counter-poisons are cordials. No doubt a generous wine, or a tonic liqueur, may sometimes restore to the stomach its shattered forces, and help it to resist more energetically the enemy which attacks it. For the same purpose Paré also recommends bleeding.

More fortunate than the cook of whom Paré speaks was a Bohemian who lived through a similar experiment. The object was to test the virtue of a mysterious substance called Ferdinand's Powder, after Ferdinand, Archduke of Austria. Mathioli of Sienna, the physician to that prince, thus relates the facts:—A man condemned to be hanged accepted a proposition made to him by order of the Archduke to be experimented on with arsenic. They made him swallow two grains of the poison. In four hours he was livid, prostrate, and, as the doctors thought, in his death agonies. They gave him a dose of the powder in some white wine; relief at once set in. He recovered rapidly: the next day he was perfectly well, and was set at liberty.

We believe that the curative effects related by Mathioli in this and in other analogous cases were due rather to the wine than to the powder; the virtue of the latter, we imagine, lay in the fact that it was so inert as not in any way to neutralise the force of the liquid.

A contemporary of Mathioli, the physician Cesalpin, mentions a method which he says was widely adopted by the nobility of his epoch to guard against poison mixed in the food. It consisted in having all dishes served in vessels of electrum, a metal very similar in composition to our vermeil (silver gilt), of the colour of amber, from which fact it derived its name. Cesalpin says the contact of a poisonous substance would tarnish this metal. Certain precious stones were also employed in a like manner. It was believed that by dipping them into culinary preparations they would reveal the presence of poison by a loss of their natural transparency. Perhaps we have here the origin of the now very conclusive experiment, which is still adopted by a good many housekeepers, of assuring themselves of the wholesomeness of mushrooms by stirring them with a silver spoon.

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oxides: this was because orpiment could be bought very cheaply in Germany, while the white arsenic was obtained at great expense from the East by the Venetian merchants.

Towards the end of the seventeenth century important modifications were introduced in the practice of medicine and pharmacy. Such modifications had become so necessary that even the theatre had displayed the absurdities of the professions, and, while it no doubt exaggerated them, founded its satire on existing facts. Monsieur Fleuran and Monsieur Purgon must have been very familiar when Molière made of them immortal types. But now professional men began to abandon the pompous and ridiculous language of mystery with which they had hitherto enveloped their practice; empiricism gave way to experiment; and after the foundation of the Academy of Sciences the medical practitioners became more learned and more dignified. The pharmacists did not remain behind. Although they had become separated from the grocers, they were for a long time classed with the barbers and the lowest class of empirics. But an honourable reaction occurred in public opinion on the importance of their art, and from that day pharmacy progressed towards the position which it now holds, and which it should hold as the intelligent auxiliary, and not the blind slave nor disdained servant, of medicine. This change was favourable to the progress of medical science, which was at the same time aided by the introduction of many new chemical remedies. Then came the interminable discussions between the savants and the physicians as to the action of these autimonial, mercurial, and ferruginous substances, and these discussions were justified, and, indeed, occasioned by the honourable efforts of our practitioners to baffle the skill of the murderer, who, in the "sympathetic powder," "powder of succession," and other similar preparations, had found the most terrible of accomplices. These powders became widely known, and in France and Italy a veritable epidemic of poisoning set in. Some of the chief criminals were brought to justice, and the public became somewhat reassured when it was seen how earnest the courts were in fulfilling their terrible duty. Three great trials especially have left a record of the excitement occasioned—that of the Marchioness of Brinvilliers, in which the celebrated chemist Glaser was implicated, in 1676; that of La Voisin, with her accomplice La Vigouroux, in 1680; and that of the Sicilian woman Tofana, in Italy, in 1709. The other two trials took place in France. It is probable that the *Poudre de Succession* originated in the same laboratory as the *Aqua Tofana*. It is certain that the Marchioness Brinvilliers had obtained her deadly skill from an Italian exile, and Tofana had communicated her horrible secrets to numerous adepts from 1659. Arsenic, in various forms, was the base of all these mysterious poisons. The *Aqua Tofana*, known as *Aquella di Napoli*, because it was first invented and employed at Naples, was an arsenical solution, limpid and tasteless, like water. Five or six drops of this terrible preparation were sufficient to undermine the human organisation, and ensure a slow but fatal disease. The monster who invented it had caused the death of more than six hundred victims when she was arrested. Put to the torture, Tofana refused to reveal her secret to any but the Pope and the Emperor Charles VI., who happened to be then in Rome. The Emperor afterwards told it to his physician, Garelli, and Frederic Hoffmann, who explains its composition and effects in his "Rational Medicine," had his knowledge direct from Garelli. This is not the first time in the history of medicine that a mysterious and deadly water has been met with. Seneca speaks of such in Thessaly, and Plutarch also describes a water of Nonacris, and, from his description of it, it would almost seem that the *Aqua Tofana* was merely an imitation of its Greek original.

It is not our plan to continue this retrospect further, for we have no intention of entering on the domain of Orfila, of Flaudin, and their learned followers. Without trespassing on their learned works, however, we have thought there might be room for the collection of a certain number of curious facts on an interesting branch of science. "*Notre modeste travail*," our author elegantly concludes, "*n'est point un traité, mais une simple causerie, ce sera son meilleur titre à l'indulgence.*"

The *Australian Medical Journal* commences a paragraph thus: "The annual meeting of the Microscopical Society of Victoria was held at the Morgue, on the 1st of October." There's a shudder for those of us whose acquaintance with "Morgues" is limited to the dismal little building on the Seine.

NAMES OF BRITISH MEDICINAL PLANTS.

By W. G. PIPER, NORWICH.

Other Names of *Digitalis*.

OVER the greater part of Scotland this plant is known to the rustics by the name of Dead Men's Bells. This name seems to explain itself, and though simplicity is suspicious in these cases, I can detect no hidden meaning in it. It dramatises for us the popular belief in the deadly powers of the plant, and vividly pictures the appearance of the flowers. It is a forceful and expressive name.

From its very expressiveness we may expect to find more names with a similar meaning in our own and other languages, and although I have found no general name—no name so universally understood as Fox-glove or *Digitalis*—yet there are one or two connected with this idea which are worthy of mention.

A short-lived name is one given, for, I think, the first and last time, in a herbal of the sixteenth century, written by a contemporary of Fuchs. This man was a German, and was known by the name of Bock (Buck). As was the fashion in those days, he translated his name into the Latin *Tragus*, and was best known to the world of letters by this title. He wrote several works on botany and medicine, but we know very little of his history. The only work of his which concerns us now is the "*Stirpium Nomenclature*," published A.D. 1555, thirteen years after Fuchs' "*Historia Stirpium*." At page 888 we have one of the earliest extant descriptions of the Fox-glove, under the heading *De Campanula Sylvestri: Digitali*; Baldglocklin order (?) Fingerkraut. *Tragus* is the only author I am acquainted with who uses this name, *Campanula Sylvestris*. He describes its origin in the following words:—"Nos a flore qui campanulam seu nolan sylvestrem Germanice Baldglocke order (?) Baldsiffelen (?) interea nuncupulam dum commodius emergat nomen"—to the effect that from the shape of the flowers, and copying the German name, he dubs this plant *Campanula Sylvestris* until a better title is proposed. The name *Campanula* had long been applied to a family of plants to which the Fox-glove has only a faint external resemblance. Hence this name invented by *Tragus* soon gave place to that proposed by Fuchs, namely, *Digitalis Purpurea*. This latter had the advantage that it had never been used for any other plant, so that it rendered confusion impossible. The name *Campanula* was soon restricted to the genus which still bears it.

The Baldglocklin and Baldglocke mentioned here must have some connection with bells. No dictionaries or other works to which I have access throw any light upon them. *Glocke* is the same word as the French *cloche* and English *clock*. The original meaning of this last word was bell, and the signification is still retained both in German and French. It came to be applied to time-pieces, from the little alarm bells with which they were furnished. . . *Cliaquet*, the Guernsey-French name of the Fox-glove, appears to be a diminutive of the French word *cloche*.*

The "*New World of Words*" is a folio dictionary, written by Edward Phillips, the nephew of Milton. The sixth edition was published in 1706, and in it the name "*Bell-flower*" is made synonymous with Fox-glove. Nevertheless it is doubtful whether the name *Bell-flower* was ever applied to the *Digitalis*. The difference between the *Digitalis* and the *Campanula* proper was fully understood at that time. But Phillips, in spite of his wide and varied attainments, was not a botanist. It is quite possible that he may have erred here and helped to perpetuate the confusion which was fast dying out. Only the authority of botanists can be unreservedly received, even on this trivial matter. Still, as the name is recorded in a work of some standing, it is right to mention it.

For want of a better place, Naperstok, the Russian name of this plant, may be alluded to here. I have no explanation of it to offer.

On the Eastern Borders of Scotland the plant is called Wild Mercury and Scotch Mercury. The true or English Mercury was the Mercury Goose-foot or *Chenopodium Bonus Hericurus*. This was much used as a pot-herb before the introduction of our more palatable culinary vegetables. How either of the many plants which have the name of Mercury came by the title is not

* Baldglocke is surely a copyists' error. Waldglocke would be the exact German equivalent for *Campanula Sylvestris*.—E. C. & D.

yet explained. But the fact that the English Mercury was wholesome throws some light on the epithets "Wild" and "Scotch" as applied to the Digitalis. They may have had their origin in the hatred and contempt which the Englishman felt toward the Scot. "It's poison, is it? Well, it's quite good enough for you, and the more you eat of it the better." Such words may have expressed the feeling that then existed. The name French Mercury applied to a poisonous plant, a species of Mercurialis, may have arisen in the same way. It must be remembered that the Border was not inhabited by Scotch nor English. The Bordermen were enemies to both, so that the name may have been forced on them from both sides.

Another beautiful Border name for this plant is King's Ellwand. Comment on it would be like gilding refined gold.

Two other names, Cows-flop and Flap-dock, deserve a few words. They illustrate curiously the wonderful confusion that existed a few centuries ago concerning the true relations of plants. To explain them I must refer to a plant which cannot now be classed as medicinal. The name cowslip is now applied to the *Primula Veris*. In Anglo-Saxon it was *Cuslyppa* or *Cusloppe*. These words are derived by the Rev. O. Cockayne from A.-S. "cu," a cow, and "slyppa," slop. I confess I cannot see any reason for this. Wedgewood, in his "English Etymology," says that cowslip is a corruption of cowsloek. He imagines that cows are fond of it. But as a matter of fact cows reject it as invariably as they do the more acrid butter-cups. Dr. Prior has suggested a much more probable but less poetical explanation. In the thirtieth volume of the "Archæologia" a medical manuscript is published. It is from Stockholm, and was written in the fourteenth century. The Cowslip is mentioned therein as Kousloppe. This is evidently the same as our English name. It is derived from the Flemish words "kous," hose or breeches, and "lopp," a flap. It means, therefore, hose-flap. As Dr. Prior says:—"Such a name could hardly have been given in the first place to the plant now called 'Cowslip,' but was very applicable to the large, oval, flannelly leaves of the Mullein,* from which it has been transferred to *Primula Veris*, through the Latin name *Verbascum*, which comprehended both the Cowslip and the Mullein." This explanation seems perfectly satisfactory. A quotation from Tragus, to be given immediately, proves that the Fox-glove was also included under the name *Verbascum*. This fact at once explains the name Cows-flop. Tragus tells us, in speaking of the Fox-glove:—"Quod caules et folia attinet posset (?) hæc planta verbascis adiungi."

How superficial in every sense of the word were these early attempts at classification. From no other reason but the general shape of the leaves, and the height of the stem, two such different plants as the Mullein and Fox-glove were included under the same generic name. And in another direction, on account of the similar shape of the leaves and colour of the flowers, Mullein and Cowslip were united. It is true the Cowslip had a distinctive name given to it. It was called *Verbasculum*. But this only proves the conviction of the relationship of these two plants. The word tells us that the one was regarded merely as the diminutive of the other.

This particular case illustrates the value of history in etymological researches. While the Fox-glove and the Cowslip retain the name, the Mullein has entirely lost it. The connecting link has disappeared. Its loss has left a gap which can only be bridged by history. No one ignorant of the classification of a couple of centuries ago could have guessed at the connection which exists between the Cowslip and Fox-glove. And hence the fact that they had names so similar would have remained inexplicable.

Cows-flop is evidently an older name than its congener cowslip. It retains more of its original form. It is evidently a partial translation of the original Kousloppe. It must therefore have been given before the meaning of the latter had been entirely forgotten.

Flap-dock also seems to be an older word than Cowslip. Even now it has the original meaning modified to a very slight degree. Dock is equivalent to the Latin *stupa*, and means the flock of tangled wool or hemp collected by the carding comb. It was originally applied to the *Arotium Lappa*. This plant, though now called Burdock, was at first simply "the Dock." The reason of the name is found in the habit of the plant of collecting round each of its hooky involucre a tuft of wool, feathers and other light matters. These were called Docks, and

gave the name to the whole plant. But the Burdock is also remarkable for its large, broad leaves. When the original meaning of its name was forgotten, it came to share the name Dock with other broad-leaved plants. Hence the plants we now call Docks and Sorrels (*Rumices*), as well as the Burdock, the Mallow, the Mullein, and other plants, were all called by the same name, different epithets being added to distinguish them. Hence, also, it is that Dock in composition now means a broad-leaved plant. According to this explanation, Flap-dock means a broad-leaved plant, whose leaves are used for flaps. This is a translation of the idea, if not of the literal meaning, of Kousloppe. The name must therefore have been given before the meaning of the word Kousloppe had begun to be forgotten.

A correspondent informs me that the name Cows-flop is still in use in North Devon. It is also mentioned in Wright's "Provincial Dictionary." This work is the only authority I have for the name Flap-dock, and it is open to the objections that its author was not a botanist, that no authority is quoted, and that no locality is affixed. Until, therefore, further information is obtained, it must be regarded as doubtful.

[N.B.—By a printer's error, the Spanish name for the Digitalis is given as Digital in my former paper. It should be Digital.

Allow me to thank correspondents for their kind answers to my requests, and to beg all or any who may be interested in this subject to communicate any notes or queries on the subject of the names of plants which may occur to them to W. G. Piper, 70 London Street, Norwich.]

NOTES ON INOCULATION.

By W. B. A. SCOTT, M.D.

THE practice of inoculation being now so generally superseded by the less painful and less dangerous process of vaccination, the history of the several varieties of the former in different countries, and even of the introduction into England of the modification which was adopted among ourselves about a century and a half ago, has been nearly forgotten by many non-professional, and not a few professional, readers. Yet the subject possesses many claims upon our attention, and it might be not unprofitable, did time and space permit, to discuss the applicability of the process of inoculation as a means of checking the ravages of other zymotic diseases; the limits and conditions under which, if at all, it might with advantage be so practised; and, in particular, to investigate the analogous practice of "syphilisation," which is said to have been carried out, especially in Italy, with such satisfactory results. In reference to this latter subject, it would be interesting to inquire why it is that while during the repeated inoculations of syphilitic matter, carried on during months and even years, which are requisite in order to secure immunity from contagion, the patient actually improves in general health, instead of suffering from any of the severe local or constitutional effects of the malady; in the case of smallpox, on the other hand, the one inoculation which, as a rule, suffices, should, notwithstanding the due employment of all known precautions, have led in so many cases to the development of the most fatal and virulent forms of the disease. This investigation seems to possess practical value, as being not unlikely to result in the partial elucidation of the conditions under which inoculation in general may be most successfully carried out, and the discovery of some of the causes of that want of success which has occasioned its desuetude in the case of smallpox and its comparative neglect in other zymotic diseases. But, while thus briefly indicating these interesting collateral inquiries in the hope that they may be more ably discussed by others, I shall, in the present paper, strictly confine myself to a brief account of the practice of smallpox inoculation as carried out among the people at large in different countries, and a short history of its systematic introduction into England, and some parts of the Continent. Even thus limited, it will be the writer's fault if the subject shall fail to prove interesting, since it is most curious to observe the extremely varied forms in which inoculation was practised among the "vulgar" of remote and dissociated countries, and the different kinds of opposition it underwent at the hands of the "learned;" while the collateral questions raised by its introduction as to the possibility of "stamping out" zymotic disease, and the fact of the general adoption of inoculation being so largely due to the

* Called Cuddy's lugs, &c. Donkey's Ears, in Roxburghshire.

enlightened and spirited exertions of one lady, seem to unite the present subject by a sensible bond of union to topics of contemporary interest.

There are records, more or less satisfactory, of the practice of inoculation from very early times among the "vulgar" in China, Arabia, India, Georgia, Circassia, Greece, Barbary, Senegal, Denmark, Auvergne, Perigord, the Highlands of Scotland, and South Wales. The practice enjoyed, therefore, the world-wide distribution which our earlier writers described as "from Denmark unto Ind," even if it did not literally extend from "China to Peru"—an expression which the discovery of America induced Johnson to select as more comprehensive. But the various modes in which it was practised in different places, together with the significant fact that until the beginning of the last century it was with the "unlearned" of the several countries nearly alone that the practice found favour, the "learned," for the most part, regarding it with suspicion and dislike, prove, as Kurt Sprengel justly remarks, that inoculation, instead of being transmitted from one country to another, must, in nearly all cases, have been an independent discovery. For, however often (as in the instance under consideration) the narrowness and dogmatism of the *savans* have induced them to labour to suppress and disparage all discoveries not immediately proceeding from their own clique, it is to the learned class that mankind must usually have been, directly or indirectly, indebted for the transmission of knowledge from land to land, especially in days when commerce was limited, and distant travel rather the prerogative of the opulent scholar than the necessity of the impecunious adventurer.

In China inoculation was practised by means of inserting portions of the scab of the pustules into the nostrils of children of from three to six years of age, who had been previously subjected to a preparatory dietetic and medicinal treatment. The confessions of the Chinese themselves, and the results of modern European experiment, all show this method to have been most disadvantageous in every respect compared with other modes of inoculation; but, as contrasted with the ordinary results of the disease, it was so favourable that it found acceptance among the neighbouring Tartars.

In India, after the patient had been kept on low diet, the epidermis was rubbed off some parts of the arm, and on those were laid pieces of cotton which had been soaked in small-pox matter; or threads of silk, similarly treated, were drawn through the skin, after the fashion of a seton. In Arabia the virus was introduced under the skin on the point of a needle.

In Georgia and Circassia, where the practice was in high favour, especially with the view of preserving the highly-prized beauty of the maidens of these *χωρία καλλιγύναικα*, it was carried on by women who used many superstitious ceremonies. They seem to have employed three needles, by means of which they punctured the *scrobiculum cordis*, the chest just above the cardiac region, the navel, the right wrist, and the left ankle, mixed the blood which issued with the virus, and inoculated this (apparently in the same localities), binding up the wounds with angelica leaves and lamb skin. These localities were perhaps selected as being little exposed to view. The eruption appeared on the seventh day.

In Barbary inoculation was practised on the back of the hand, between the thumb and forefinger, although the custom was condemned by the orthodox Mahometans as an intrusion on the domain of Providence. In the Scottish Highlands woollen threads, soaked in the virus, were bound round the wrists: the same method was followed in South Wales, the skin having been previously scraped with the back of a knife. I do not find a precise description of the mode adopted in Denmark, but it is expressly stated that there the results were sometimes more serious than those of an ordinary attack of small-pox.

But we are more immediately concerned with the mode of inoculation practised among the Greeks, since we are expressly told by Porter, the British ambassador at Constantinople, that it was from Greece (and not, as might have been at first supposed, from Georgia) the practice found its way to that city, where it attracted the attention of Lady M. W. Montagu. It was almost universally in high esteem among the Greeks of Constantinople, where an old Thessalian woman enjoyed almost a monopoly of the practice, and who, by the superstitious rites she employed, no less than by the fact of her remuneration apparently consisting in wax tapers for the service of the Virgin, seems to have herself partaken in no small measure of that superstition with which her country was so often reproached by nearly every Roman poet from Ovid to Claudian. This worthy

old lady professed to have learned the practice of inoculation by means of a direct revelation from the Virgin. She inoculated on the forehead, the cheeks, and the chin,* in order that the four punctures might form a cross, and covered the wounds with half a nutshell. She professed to have inoculated more than 40,000 persons, being scrupulously careful in the selection of the matter she employed, as also in that of the subjects and season of the operation—"healthy children during winter or spring." This description of the old Thessalian's mode of practice is taken from the contemporary accounts of Emanuel Timoni, physician at Constantinople, Skraggenstierna, a Swedish physician, and Pylarini, Venetian Consul at Smyrna—works which, introduced into New England in 1721 by a clergyman of the name of Mather, led to the first trial of inoculation in America. The accuracy of these observers, whose works appeared in 1714, is in great part vouched for by De la Condamine in 1732. It is right to add that no fatal result occurred among the numerous cases which fell under their notice which they did not feel might be fairly attributed to accidental causes; and Le Duc and Kennedy (whose writings appeared in 1722 and 1715 respectively), describing inoculation as practised in Constantinople, state that only two deaths occurred among 2,000 cases. This greatly diminished mortality they ascribed to the careful selection of the subjects and time of operation, and to the smaller number of pustules which appeared after inoculation than after an ordinary attack of smallpox. The practice was advocated in 1717 by Boyer, a physician in Montpellier, while Castro, another physician, suggested certain improvements of detail, chiefly the selection of some other locality than the face as the seat of operation. For its general adoption in Europe, and recognition in the scientific world, we are mainly indebted to the laudable exertions of Lady Mary Wortley Montagu, who well deserves a brief notice.

She was the eldest daughter of the Earl (afterwards the Duke) of Kingston, born in 1790, her maiden name being Lady Mary Pierrepont. Though, from the pride her father naturally felt in her youthful beauty and vivacity, and from the pains which he took to effect her early introduction into the society of the Augustan age of Anne, it must be presumed he spared no ordinary pains on her education, still, she seems to have been mainly indebted to her own exertions for her extensive familiarity with English literature, while her classical knowledge has probably been much exaggerated. With Greek she was most likely unacquainted, the translation of Epicætus, to which she was indebted for her reputation as a Grecian, having been probably made from a Latin version. In 1712 she married Edward Wortley Montagu, cousin of Lord Halifax, who had long been on intimate terms with Addison and the most celebrated wits of the age. He was appointed ambassador to Turkey in 1716, whither he and his wife proceeded, remaining at Constantinople until 1718, during which time she wrote the celebrated "Letters" which were published after her death, and, indeed, were manifestly written with a view to publication. Returning to England, she passed the next twenty years in literary society, and it was during this period that she had the celebrated quarrel with Pope, which led the ill-natured poet to satirise her as "Artemisia," "a female atheist," &c. In 1739 she went to Italy, unaccompanied by her husband, from whom she parted on perfectly good terms. Returning to England at her daughter's urgent request in 1761, she died at home in the following year.

While at Constantinople in 1717 she was desirous that her son should be inoculated by the above-mentioned old Thessalian lady, who, happening unfortunately to employ a rusty instrument, occasioned so much pain to the patient that her services

* This differs slightly from Lady M. W. Montagu's account. She says:—"The Greeks have commonly the superstition of opening a vein in the middle of the forehead, one in each arm, and one on the breast, to mark the sign of the Cross." She adds—"This is not done by those that are not superstitious, who choose to have them in the legs, or that part of the arm which is concealed. The children or young patients play together all the rest of the day, and are in perfect health till the eighth day. Then the fever begins to seize them, and they keep their beds two days, very seldom three. They have very rarely above twenty or thirty in their faces, which never mark, and in eight days' time they are as well as before their illness. Where they are wounded there remain running sores during the distemper. . . . The French ambassador says pleasantly that they take the smallpox here by way of diversion, as they take the waters in other countries. There is no example of any one that has died of it. . . . I should not fail to write to some of our English doctors very particularly about it if I knew any one of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper is too beneficial to them not to expose to all their resentment the hurry wight that should undertake to put an end to it."—*Letters*.

were discarded in favour of those of Dr. Maitland, physician to the Embassy. About 100 pustules appeared on the child, and he speedily recovered. After her return to England, in 1721, she caused Maitland to perform the same operation on her daughter (subsequently the Countess of Bute). Her courageous example was followed by Dr. Keith in the case of his own son, who was thus the second British inoculated patient. As small-pox was at this time raging in London, the Princess of Wales, one of whose daughters was already dangerously ill, naturally anxious for the preservation of her other children, obtained permission to have inoculation tried upon six criminals then under sentence of death, who were promised their lives on condition of their submitting to the operation. The results in these cases, as well as in those of six charity children on whom (with more questionable propriety) the experiment was repeated, were so satisfactory as to induce various members of the Royal Family to submit to inoculation, along with 200 others, among whom the only fatal case was that of the Duke of Bridgewater's son, which seems to have been accidental. During the same year Nettleton, a physician at Halifax, successfully inoculated forty children, using for the purpose dossits of cotton soaked in virus and applied to portions of the skin from which the epidermis had been scraped—a method which, as we saw above, had prevailed in South Wales. Still, Boretius, who described these successful cases, of which he had been an eyewitness, already found it necessary to defend the practice from moral and theological objections.

The first serious check which the new practice received seems to have been the unfortunate result of its first introduction into America in 1721, where, out of 244 patients, 6 died. Notwithstanding the low rate even of this mortality as compared with that of ordinary small pox (estimated by Jurin in 1726 as 1 in 14, and by others as high as 1 in 6), and although due allowance was not made for errors in the manner and time of operating, we cannot wonder that this untimely mischance greatly encouraged the opponents of an innovation for which, the sarcastic with some plausibility alleged, we were mainly indebted to the fanciful zeal of an English blue-stocking, the too apt pupil of a crazy old Thessalian fanatic. Furthermore, Maitland had laid himself open to deserved ridicule by asserting that the inoculated disease was not infectious, while some questionable cases of inoculated persons having afterwards suffered from the natural disease were alleged. Wagstaffe maintained that the practice, if suitable at all, was soonly among persons of the proverbial temperance and general manner of life of the Orientals. The Rev. E. Massey, at St. Andrew's,* preaching from the words, "So Satan went forth from the presence of the Lord, and smote Job with sore boils from the sole of his foot to the crown of his head" (Job ii. 7), inferred that the practice of inoculation was of manifestly diabolical origin, and had first been performed by the enemy of mankind on the Arabian patriarch. Others objected that since delicate persons were considered unfit subjects for inoculation, the process was at best an imperfect prophylactic measure, overlooking those who stood most in need of its protection. The result of all this was that, notwithstanding Kirkpatrick's masterly defence of the practice, based on the results of 1,000 cases in South Carolina, the number of annual cases in London and its neighbourhood fell from 415 in 1723 to 40 in 1724, and the sum total of all cases throughout England between 1726 and 1738 only amounted to 2,000.

Inoculation was introduced into France by De la Coste in 1723, and found a warm advocate in the Duke of Orleans. But after that nobleman's death the theological disputes of the Sorbonne, and a furious publication by Hecquet, in which inoculation was declared to be opposed to the laws of the Creator, savouring rather of magic than of science, inefficient as a prophylactic measure, originally practised by old women and unsanctioned by antiquity, gave a temporary triumph to its opponents. In Germany the practice found greater favour, having been introduced by Maitland himself, who went to Hanover in 1724 by the king's invitation, in order to inoculate several members of the Royal Family. The cases proved successful, and this is not the first instance in which the infancy of a new invention has owed to royal patronage its defence from ecclesiastical or scholastic persecution.

For nearly twenty years great apathy continued to prevail in most countries respecting inoculation; but in 1746, Dr. Maddox, Bishop of Worcester, with the assistance of the Duke of Marlborough, instituted a society for the advancement of the practice. Three buildings were obtained—one in which those about to be inoculated resided during such preliminary treatment as might be deemed needful;* another for the reception of the patients during the progress of their ingrafted malady; and a third for those suffering under the natural disease. A few years later the Bishop, from the pulpit, combated the religious and other scruples which some entertained concerning the practice, and his enlightened efforts were ably seconded by clergymen of other denominations, particularly by the celebrated Dr. Doddridge. Dr. Mead also gave his valuable support.

A great impulse was thus given to the practice: repeated experiments were performed, and the details became subjects of investigation. As Lady M. W. Montagu had introduced it, the matter was inserted into the veins on the point of a needle; but Kirkpatrick had already deprecated this direct admixture with the blood;† others had suggested the denudation of a portion of the body by means of blisters, and laying the virus on the exposed surface thus obtained; and in 1752 Brooke, and, after him, Butini, advocated the method of inunction. Meanwhile, the practice spread through Switzerland and Italy, its dissemination in the latter country, as in our own, being mainly due to the exertions of a lady, the Marchioness Buffalini. It met with less opposition from the Italian clergy than might have been expected.

In 1754 appeared De la Condamine's celebrated defence of inoculation, which led the medical faculty in Paris to give the subject more favourable consideration, while the London College of Physicians pronounced decidedly in its favour. In the same year Dr. Burges, and subsequently other authorities, maintained, in opposition to an objection sometimes brought against the practice, that it was impossible for the virus to carry over to the inoculated person any disease except small-pox. This was also asserted by Hosty in 1755.

In opposition to De la Condamine, Cantwell and De Haen urged that by the practice of inoculation many were infected, and became the centres of infection to others, who might but for this have escaped the disease altogether; that often frightful disfigurement resulted from inoculation; that inoculated persons sometimes took the disease a second time, thus showing the measure to be no certain prophylactic; that there were many deaths in consequence of the operation; and that the mortality from natural smallpox had been much exaggerated. To this Professor Rast, of Lyons, added that we ought to aim at stamping out the disease altogether by quarantine laws and smallpox institutions, rather than at merely mitigating it. These and similar arguments had so much weight at Paris that by an *arrêt* of June 8, 1763, inoculation was prohibited in certain towns and suburbs. But, after repeated meetings of the medical faculty, in which De l'Epine urged all the old objections, especially dwelling on the dangers of increasing the spread of the disease, the cause was, though by no means unanimously, decided in favour of the practice, greatly through royal intervention (1769).

To sum up: within ten years of the death of Lady M. W. Montagu, inoculation was introduced and largely practised in every country in Europe and over a large part of America, and for its rapid spread we are largely indebted to the enlightened benevolence of clergymen and ladies.‡ As might have been expected, the last country to receive it was Spain. All opposition had not ceased, but the value of the practice was generally recognised.

* The preparatory treatment recommended by Dr. Freven (1749) consisted in an antiphlogistic regimen, with abundance of cold water and the administration of Ethiop's mineral (black sulphide of mercury). I may remark, in passing, that the fate of this drug is interesting as affording an instance of the instability of therapeutical reputation. It is contemptuously dismissed in three lines by Dr. Scoresby-Jackson, yet, happening to open Dr. Cheyne's "Natural Method" (1742) at random, I found the following directions in less than one page:—"In scurvy, gout, erysipelas and cutaneous diseases, give Ethiop's mineral. . . . in obstruction of the menses Ethiop's mineral. . . . in inflammation of the eyes, Ethiop's mineral. . . . in disorders of the stomach or bowels, Ethiop's mineral. . . . in rheumatism, sciatica, jaundice, anasarca and asstes, Ethiop's mineral."

† Kirkpatrick's meaning, as given by Sprengel, is not quite clear. What he would seem to have deprecated, if we are to take his expressions literally, is inoculation with a mixture of blood and virus. This, we have seen, was practised in Georgia and Cirenasia, but it was not the Georgian, but the Grecian, method which Lady M. W. M. introduced, and in this there seems to have been no question of mixing the virus with blood prior to inoculation.

‡ The clergy were especially active in its behalf in some parts of Russia.

* This seems to have been St. Andrew's Church in London, not the town of St. Andrews in Scotland, because we read that it was the same pulpit from which the Bishop of Worcester afterwards delivered an address in favour of inoculation.

Professor Gatti, of Pisa (1760), was the first to practise inoculation with matter taken from inoculated persons, instead of from those who were suffering from the natural disease. He greatly simplified the preparatory treatment and the treatment generally of his patients. Similar improvements were introduced or propagated by the English physicians Sutton and Dimsdale. But the details of practice were far from having undergone all the improvements of which they were capable when the writings of Jenner on vaccination gave a new direction to scientific inquiry. Superior as is in many respects the practice introduced by Jenner to that introduced by Lady M. W. Montague, it may still be suspected that the neglect into which inoculation has fallen may have postponed if not precluded our knowledge of many important applications of which, under some form or other, the latter is susceptible.

APPROXIMATE QUANTITATIVE TESTS.

By J. BARKER SMITH.

Fourth Paper.

IV.—ESSENCES.

TERPENES and substances associated with them, by practice or in nature, are here treated of. Natural terpenes illustrate especially that chemical and physical tests are subordinate to other qualities sought in bodies. Elaborate tests may be faulty from alterations which scarcely affect the real value of an essence, or they may altogether fail to detect serious adulterations. Articles not controlled by analysis ought not, at the present time, to be imported.

If the pink colour of one or two cubic centimetres of the dilute permanganate solution mixed with 100 c.c. of *rectified spirit* in a cylindrical measure, and viewed from above, should disappear, after the lapse of two or three minutes, the spirit itself should be suspected to contain grain oil or equivalent impurities.

An approximation may be made by using for convenience 10 c.c. of the standard permanganate.

From 7 to 10 c.c. of ordinary methylated spirit, or about one-tenth that quantity of grain oil, will discharge the colour of the 50 c.c. permanganate.

Spiritus.—Examination of essential oils is curtailed, as specimens must be of known preparation, varieties and the operation of feeble agents of change considered, before any absolute capacity for oxidation is fixed. It is very probable that the permanganate test and boiling point will have a mutual dependence. Official solutions of the essential oils should be diluted at least ten times (1 in 500) with spirit, and the flask containing the 50 c.c. of acid permanganate well shaken.

The following numbers represent the decolorising powers of the best commercial oils. Multiplied by 1,000, the result will express the cubic centimetres required when a one per thousand solution in spirit is used:—Caryoph., '0015; Cinnam., '005; Lavand., '0075; Bergam., '01; Myristic., '01; Tereb., '015; Limon., '016.

A few drops of turpentine and sulphuric acid boiled with 10 c.c. of glycerine will develop, first an odour of the lime, afterwards that of sandal wood; but neither this reaction nor the differences of capillarity afforded any useful result in those cases where turpentine was likely to be an adulterant.

Aque.—Three of the official waters were prepared and selected for study, curaway, dill, and cinnamon. They were found overcharged solutions, and stronger than commercial specimens: the number of cubic centimetres required to decolorise were, respectively, 2, 5, and $4\frac{1}{2}$, more than half of decolorising power remaining with residue.

The residue of dill speedily afforded small acicular crystals when treated with sulphuric acid, which reminded me of those which I have met with in the water dropwort, and which were non-poisonous and might be apiol.

For instance, the alcoholic extracts of the tubers of water dropwort (*Eranthe crocata*) gave a reddish-brown liquid (terpene?), which when oxidised by the permanganate developed the odour of Dutch liquid. The marc treated with weak sulphuric acid gave to other a principle which crystallised in slender needles, and which did not appear poisonous.

Tincture.—This section is intended to afford a means for estimating the value of some aromatics in powder or in tincture. From results distributed in other parts of this paper, we may hope also to be able to approximate the proportion of volatile oils in drugs when in small quantities, namely, by estimating the distilled water, or by evaporating the tincture until free

from odour, diluting and re-estimating. Numbers refer to decolorising power of drug when practically exhausted. The process of extraction has been alcoholic maceration and percolation to ten parts. Such tinctures as those of cloves, cinnamon, cassia, and pepper, should be diluted with spirit at least to one of drug in fifty:—Caryophyllum (old), '025; Cort. Cassia, '045; Cort. Cinnam., '06; Piper Nigrum, '055; Piper Longum (old), '22; Myrist., '1; Zingiber, '25; Canella Alb., '25; Fruct. Anethi, '25; Fruct. Carui, '16. The tinctures afford, after oxidation, a more distinct odour; that of cassia became turbid and of a primrose colour, which cinnamon did not. As regards solubility of oils in water, close results may be obtained by adding weak spirituous solutions to an invariable quantity of water, agitating and noticing when the brilliancy of the water is disturbed; e.g., 2 c.c. of the ginger tincture produced a turbidity in 100 c.c. of water; a fifth as much of the pepper tincture did the same.

Cortex Limonis, (dried), '16, or '3 when tannin matters are thrown down by ammonio-acetate of zinc and dilution. Mesocarp contains about half the aroma and precipitable matter of the outer peel. Cortex Aurantii, about the same as lemon, but not so fully examined. Spt. Ether. Nit.—Acidity seemed to render results abnormal; examination therefore deferred. In conclusion, I beg to record here that I have found the permanganate test to afford a simple means of estimating uric acid, the details of which will be given in their proper place.

COLORATION OF IODIDE OF POTASSIUM.

IT not unfrequently happens when iodide of potassium is neutral or nearly neutral to test paper that it "goes bad"—that is, it develops a yellow coloration indicative of free iodine. The presence of this free iodine in the iodide is objectionable for many reasons, and may be got rid of either by re-crystallising the salt, a tedious and troublesome process at the best, or the salt may be heated over a vapour or sand bath, which will drive off the iodine, or, more conveniently still, the salt may be simply exposed for a few hours (the length of time will depend upon the state of the atmosphere) in the open air. So much for the practical aspect of the subject, in answer to a correspondent in a previous number of the journal. There are, however, several features connected with the phenomenon of this coloration which are not only interesting in themselves, but which seem at present also so little understood, that we have referred to the subject chiefly for the purpose of touching on several of them. If, for example, a small quantity of the yellow-coloured iodide be placed on an ordinary sheet of white paper, and exposed to atmospheric influence for a short time, there will be found dark iodine stains wherever the crystals have come into contact with the paper. It might at first be thought that these stains were caused by the crystals absorbing moisture from the atmosphere, which ultimately, saturating the crystals, carried down the pre-existing interstitial moisture along with the free iodine into contact with the paper. This would seem the more probable from the fact that the yellow coloration gradually disappears from the surfaces of the crystals, and they gain at the same time a sensible increase of weight, showing absorption of moisture. If, however, the stains be carefully examined they will be found to be dry, apparently showing no moisture whatever, in this respect being in marked contrast to the stain produced by crystals faintly alkaline exposed under similar conditions. In this latter case the stains would simply be wet and greasy-looking, making the paper at the spot transparent, as if touched with oil, and round the outer edge only of this oily spot would there be the least trace of iodine stain. If crystals decidedly alkaline (it is not difficult to get iodides of all degrees of alkalinity) be next exposed, the spot will be similar to the last, with the exception that there would be no appearance of iodine stain at all. In short, the appearance which the stains in the first instance present is determined by the alkalinity of the iodide. This is not unimportant; but a far more important feature remains to be noticed, namely, that the degree of alkalinity of any individual salt may be determined by these stains with a greater degree of nicety than by any other method with which we are conversant. If the sheets of paper on which the different iodide stains have been produced are in their turn exposed to atmospheric influence, it will be found that their degree of alkalinity is relatively in proportion to the time required to develop the dark iodine stain. In other words, the oily-looking translucent spot referred to is ultimately developed into an iodine stain, and

according as the iodide which has produced the spot is more or less alkaline, so will the iodine stain be a longer or shorter time in being developed. The neutral salt at once produces the stain, the salt slightly alkaline after some exposure of the spot, the salt decidedly alkaline after still longer exposure, and so on in proportion to their alkalinity.

Here we are brought back to the point from which we originally started, namely, the coloration of the crystals, for apparently the development of free iodine in the iodide and the development of these iodine stains may be attributable to the same cause. The explanation of this cause is surrounded with difficulties. If we suggest the neutralisation of the alkaline stain spots by the carbonic acid of the atmosphere, and then at the point of neutralisation the development of free iodine by the ozone, we have the simple application of the usual potassium iodide test for the presence of ozone.

It has been long known that the iodide of potassium employed to detect the presence of ozone, if the test is to be at all delicate and reliable, requires to be exactly neutral, and the general theory is that the potassium iodide is decomposed, the potassium combining with oxygen, while the iodine is liberated. This decomposition, however, seems irreconcilable with the fact that we have invariably found that iodate is formed on exposure of the iodide, whether it be alkaline or neutral; nor does it explain the further fact why the combined influence of the ozone and carbonic acid upon the iodide should be limited. The yellow coloration of the salt apparently never goes beyond a certain depth on the one hand, nor is the iodide affected by the ozone if the salt is of a certain degree of alkalinity on the other hand. In short, there appears to be an interesting balancing of opposing powers, which, to say the least, is interesting, and which evidently requires further investigation.

A FEW NOTES ON VINEGARS, THEIR IMPURITIES AND ADULTERATIONS.

By MR. WM. GILMOUR, EDINBURGH.

THE recent investigation of some commercial vinegars having discovered considerable diversity both in the strength and purity of the various samples, a few notes, it is hoped, on the processes by which they are more commonly prepared, together with the impurities which may be peculiar to each, and the best mode of detecting them, may not be out of place to the general reader. Vinegar, it need scarcely be stated, is the popular term for an aqueous solution of the acetic radical represented by the formula $C_2H_3O_2$, and the Pharmacopœia recognises two distinct processes for obtaining this acid, although it gives in neither case specific instructions for its preparation. In the one case the acid is merely stated to be obtained from malt and unmalted grain by the acetous fermentation, and in the other by the destructive distillation of wood and subsequent purification. It leaves, however, manufacturers to follow their own processes and modifications, but furnishes certain tests to which the acids should conform, both as regards strength and purity, and these will be referred to in their order.

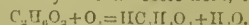
1. ACETIC ACID BY DESTRUCTIVE DISTILLATION OF WOOD.—The woods employed are chiefly the hard non-terebinthinous kinds, such as beech, birch, oak, ash, linden, &c., which, having been first dried, are placed in large iron retorts and thoroughly carbonised by gradually raising the temperature until the retorts are red hot. The process, in short, altogether in the first stage very much resembles the distillation of coal in the manufacture of coal gas. Amongst the products which pass over is impure pyroligneous acid, a black, oily-looking liquid containing tar and other hydrocarbon compounds. This crude acetic acid is generally purified by converting it into an acetate by saturating either with lime or soda, and afterwards exposing the resulting salt to a heat sufficient to destroy the tar without decomposing the salt itself. The acetate is then purified by repeated recrystallisations, and the acetic acid finally liberated by distilling with sulphuric acid, which seizes on the base to form sulphate of lime or soda, thus,



The acetic acid thus obtained is again purified by re-distillation, and upon the care with which this is performed will depend the presence or absence of many of the impurities with which it is apt to be contaminated.

2. VINEGAR BY THE PROCESS OF ACETIFICATION.—This process consists essentially in the oxidation of alcohol malt—beer,

cider, fruit, sugar and similar substances being the primary agents employed in this country, whilst in France the agents more commonly employed are inferior wines. The oxidation of the alcohol produced from these substances may be effected in various ways, but by whatever process it is converted into acetic acid it in every case passes first into an intermediate compound named aldehyd, an extremely interesting body containing two atoms less of hydrogen than alcohol. These two atoms of hydrogen go to form water by abstracting one atom of oxygen from the atmosphere, and the aldehyd, abstracting another atom of oxygen, passes into hydrated acetic acid, thus,



The relation in which these different bodies stand to each other will be apparent from the following formulæ:—

Alcohol..	..	..	..	..	..	= C_2H_5O
Aldehyd ..	..	..	..	..	..	= C_2H_3O
Acetic acid	..	..	..	..	..	= $C_2H_3O_2$

Aldehyd contains two atoms less of hydrogen than alcohol, and acetic acid contains one atom more of oxygen than aldehyd. If the vinegars were obtained directly from alcohol by oxidation they would be had probably in a state of comparative purity, but, as already indicated, British vinegars being derived principally from malt (hence the name malt vinegar), and foreign vinegars from wines (hence the names red and white wine vinegars), they are found to be contaminated with a number of impurities, varying with the source from which they are derived and the care with which they have been prepared. They all contain, for example, more or less of gluten, saccharine and mucilaginous matters derived from the peculiar decomposition of the ferments, and as the proportions of these vary somewhat in different vinegars it is apparent the specific gravity as given in the Pharmacopœia is to be depended upon as a criterion of strength only within certain limits. Moreover, the presence of these substances in the vinegars has led to the introduction of another impurity still, and which too frequently degenerates into direct adulteration, in the permission by the Excise authorities of the addition of one part sulphuric acid to one thousand parts vinegar, under the belief that it prevents putrefactive changes in the organic bodies present in the vinegar. So far as these limits are not exceeded, seeing it is permitted by law, the addition of the sulphuric acid cannot be considered either an impurity or adulteration, but an examination of most commercial vinegars will show that this amount is generally exceeded, and often greatly exceeded, so that previous to the strength of the vinegar being estimated the amount of sulphuric acid actually present in the sample should first be determined and accounted for. For this purpose the Pharmacopœia directs that chloride of barium be employed, which is precipitated as insoluble sulphate if sulphuric acid be present in the vinegar. Ten drops of the standard solution (equal to 1 grain chloride of barium) is added to 1 fluid ounce of the vinegar, and the precipitate separated by filtration, when, if there is no excess of sulphuric acid present, no further precipitate will be formed on the addition of one drop more of the test to the filtrate. One grain chloride of barium will decompose .471 grain sulphuric acid (H_2SO_4); or, in other words, for each ten drops of the standard solution 471 grains of vinegar should be taken, instead of 445 grains as ordered in the Pharmacopœia, and each drop more of the solution required than this to complete the precipitation would indicate about one-tenth excess of sulphuric acid. Theoretically this would be correct were the precipitation entirely effected by free sulphuric acid, but practically it will be found that all vinegars contain a certain amount of sulphates in solution, derived from the waters as well as materials employed in their preparation, and which vitiate the foregoing results to a considerable extent. The difficulty here is one not peculiar to sulphuric acid, or to a vinegar prepared according to the process which we have just been considering, and various methods have been suggested both for the detection and estimation of free acids as adulterants in both kinds of vinegars. In many text-books the following plan for detecting free sulphuric acid is recommended, with several modifications, namely:—Evaporating at a gentle heat (a strong heat would drive off the acid) a small portion of the suspected vinegar, adding to it a few grains cane sugar, and continuing the evaporation until of the consistence of thick syrup, when, if free acid is present, it will become almost black from the charring of the sugar. This test, however, cannot be depended upon, as concentrated solutions of alum and other sulphates with feeble bases give a similar reaction with sugar, and, moreover, even where no sugar is present the continued evaporation up to a certain point of a liquid containing organic

matter will give rise more or less to a similar colouration. Probably a better plan is to evaporate a portion of the vinegar at a gentle heat until of the consistence of thick syrup, and adding to this when cool a small quantity of strong alcohol, when the free sulphuric acid, if present, will be taken up by the alcohol, and may be separated by filtration or decantation from any sulphate present, and tested for in the usual way. The weakness of this method consists in the almost impossibility of preventing a certain amount of sulphate from being taken up by the alcoholic solution, and thus vitiating the results. The following mode of procedure has been found useful, and sufficiently correct to justify its recommendation:—Add to a small quantity of the vinegar not more than one grain of starch; mix thoroughly and boil for a few minutes; let cool, and add to it a single drop of solution of iodide of potass (5 grains to 1 ounce) in which free iodine is present, when, if any free mineral acid be present in the vinegar, the blue iodide of starch will fail to be found, owing to the conversion of the starch into glucose by the action of the acid. The presence of free acid having thus been determined, next take a fresh portion of the vinegar and distil over from a small flask until nearly the whole has passed over, and to one portion of the distillate add a few drops of nitric acid with solution of nitrate of barium for the presence of sulphuric acid, and to another portion solution of nitrate of silver for hydrochloric acid. Nitric acid may be detected by adding a drop of a solution of indigo perfectly neutral to the suspected vinegar in a test tube and gently heating, when, if free nitric acid be present, the colour will be discharged. If the colour remain permanent a drop or two of strong sulphuric acid should next be added while the solution is still warm, when, if nitrates are present, discolouration will take place. Nitric acid is rarely present either as an impurity or adulterant in vinegar, but hydrochloric acid may be frequently found, especially in acetic acid, from the employment of it by some makers instead of sulphuric acid to decompose the acetate in the last stage of the process. The fact, however, should not be overlooked that most vinegars contain more or less of alkaline and earthy salts of organic acids, and unless hydrochloric or sulphuric acids be added to the vinegars in some considerable quantity, the probability is that they would simply decompose these salts, and would not, therefore, be found to exist in the free state in the vinegars.

Another acid frequently present as an impurity in acetic acid is sulphurous acid, liberated by the action of sulphuric acid on the acetate of soda in the process already described. The Pharmacopœia directs that a small quantity of the acid be mixed with half a drachm pure hydrochloric acid and half an ounce distilled water in a small flask into which has been placed a little pure granulated zinc. The resulting hydrosulphuric acid, if sulphurous acid be present, is detected by acetate of lead, giving a black colouration or precipitate. Sulphurous acid (as well as free chlorine) may also be detected by its bleaching action on delicate vegetable colours, or, better still, by the greenish colouration which it yields on a little of the vinegar being heated with a few drops of solution of bichromate of potass. It may be converted under the action of nitric acid into sulphuric acid, and estimated by chloride or nitrate of barium.

The only remaining Pharmacopœia test for impurity is the sulphuretted hydrogen test, which should cause no change of colour in the vinegars. If the vinegar be saturated with this gas and allowed to stand for a short time an ensuing milkiness of the liquid would indicate tin or sulphurous acid, the latter being discriminated by the tests already given; whilst a dark precipitate would indicate lead or copper, which may be distinguished from each other by collecting the precipitate, dissolving in nitric acid, and applying to one portion excess of solution of ammonia, which would give a blue colouration were copper present, and to the other portion a drop or two dilute sulphuric acid, which would give a white precipitate were lead present. In addition to the foregoing acetic acid should not lose colour or deposit a brown sediment on standing when neutralised with carbonate of soda or caustic potass and a drop or two of solution of permanganate of potass added. If it does empyreumatic matter is present, owing to the process of distillation having been carried on carelessly or at too high a temperature, or to too great an extent. Nor should the acid have at all a yellowish colouration, in which case resinous matter might be suspected, and this would be confirmed if, on the addition of hydrochloric acid, it separated and floated on the surface of the liquid. Vinegar (obtained by fermentation), on the other hand, when distilled from a small flask into a receiver carefully cooled,

should be destitute of either alcoholic taste or smell, and should not change to a yellowish brown when mixed and heated with an equal quantity of solution of caustic potass, both tests being indicative of aldehyd. Nor should it, when carefully saturated with carbonate of magnesia and slowly evaporated, give indication of the presence of acrid vegetable substances by their colour or taste.

The ammonia test, according to Neligan, serves to distinguish French from English vinegars: with the former the colour is purplish; with the latter there is either no change or it is brownish. As, however, wine vinegars always contain traces of tartaric acid, and tartrates probably, a more distinctive test is to neutralise the vinegar with ammonia and add solution of acetate of lime, when, if either tartrates or tartaric acid be present, tartrate of lime will be precipitated. Cider vinegar, under the same conditions, will also fail to give a precipitate, but if acetate of lead be added a beautiful pearly scale precipitate of malate of lead will be formed, very characteristic of this vinegar. The variable proportion in which both saline and mucilaginous bodies, as already mentioned, are present in all vinegars prepared by the acetous fermentation would sufficiently explain why a considerable discrepancy should frequently occur betwixt their saturating power and specific gravity. There is, however, than this another and even more important reason why the density of neither kind of acid should be accepted as indicative of their strength, namely, that the increments of density advance in very unequal proportion to the percentage of real acid present in the vinegar. This is very forcibly shown if water be added to an acid, say of 1.068 density. The water will be found at first to increase the density very considerably, and although expansion after a time again sets in it still remains permanently of greater specific gravity. Vinegar contains on an average from 4 to 6 per cent. real acid ($\text{HC}_2\text{H}_3\text{O}_2$), 5 per cent. being considered standard or proof vinegar, while acetic acid should contain 33 per cent. Of the various processes suggested and in use for estimating their strength the Pharmacopœia process of saturating the acid with hydrate of soda is probably the simplest, and is sufficiently correct for all ordinary purposes. One equivalent in grains of hydrate of soda contained in 1,000 grain divisions of the standard solution saturates one equivalent of the acid; consequently, if 60 grains of either acid be weighed for estimation each 10 grains division of the standard solution required for saturation would correspond to 1 per cent. hydrated acid ($\text{HC}_2\text{H}_3\text{O}_2$).



Literary Notes.

FOWNES' "MANUAL OF CHEMISTRY" has for many years held the first rank as a concise and thorough exponent of the science, especially suitable for students thoroughly in earnest. Since its first publication chemistry has developed with a rapidity which would have soon swamped a work, however laboriously compiled, if it had not been constantly recruited by additional editorial skill. Constant work of this kind has been freely lavished on "Fownes," and now the twelfth edition, under the able revision of Mr. Henry Watts, author of the great dictionary of the science, which might have been sufficient work for one man's lifetime, makes its appearance with all the elasticity of early youth. Now the work is divided into two volumes, the first, treating of inorganic chemistry, having as yet appeared alone. Most of the new matter will be contained in the second volume, but in this any new facts, as, for instance, all that is known concerning gallium, are treated in sufficient fulness. In Mr. Watts' hands "Fownes" will continue to retain its character as a model of what a scientific treatise should be.

We have received a copy of "The Year-Book of Pharmacy" within the past few days, but have only as yet glanced through it cursorily. It contains this year over 700 pages, which appear to be well packed with strong nutriment for pharmacists. The scientific element seems still to monopolise all the space, a characteristic which we suppose is desired by the members of the association. We shall take the opportunity next month of making further comments on this important work if we find in it any sections to criticise.

Scientific Notes from Foreign Sources.

TESTING SALICYLIC ACID.*

DISSOLVE 5 centigrammes in 5 cubic centimetres of strong alcohol. Let the solution evaporate spontaneously on a watch glass. If the acid be pure and crystallised fine brilliant crystals will be left on the glass. A yellowish tint indicates that the acid was obtained by precipitation, while a brownish shade is sufficient to justify the rejection of the sample as of bad quality (Kolbe).

The journal from which we quote considers the sulphuric acid test the most satisfactory, although with a perfectly pure sample the results are exactly identical with those obtained from Kolbe's process. The sulphuric acid test is to place 50 centigrammes of salicylic acid in a tube, and pour upon it 5 centimetres of pure concentrated sulphuric acid. The solution should be perfectly colourless and limpid. Impure samples are tinged from a slight to a dark yellow.

AN ADULTERATION OF OIL OF CLOVES.

BESIDES the methods commonly practised with essential oils, another method of adulteration is sometimes met with in the German drug trade. It is an admixture of phenol, the smell being disguised by that of the cloves. Professor Jacquemin† recommends the following test, which only requires a single drop of the suspected oil. This is mixed, by means of a glass stirring-rod, with a fraction of a minim of aniline, and diluted with 5 or 6 c.c. of distilled water, to which are added a few drops of hypochlorite of soda. If phenol is not present the coloration will be that of the aniline alone, a violet tinge, which speedily passes away. If the contrary, the solution takes a fine blue colour, which remains for some minutes. Care must be taken not to disturb the mixture after adding the hypochlorite. A mixture of 5 per cent. of phenol gives a very intense blue; even 1 per cent. gives an unmistakable blue coloration.

EUCALYPTUS GLOBULUS.‡

THE following brief summary of part of an address by Dr. Göppert, at Breslau, on this tree may be a useful recapitulation of its history:—

The tree was first discovered in 1792 in Tasmania by the French botanist, De la Billardière, who accompanied one of the expeditions sent in search of the unfortunate La Perouse. The first leaves are opposite and horizontal, but after four or five years these are succeeded by others which are alternate and vertical, i.e., with the edges turned towards the sky and the earth, an arrangement productive of peculiar effects of light and shade. The specific name *globulus* was bestowed on account of the resemblance of its waxy fruit to a kind of hutton then much worn in France, while the tree owes its generic name *eucalyptus* to an opercular membrane which covers the calyx previously to flowering. Baron Ferd. von Müller was the first to suggest that its perfume, resembling that of Cajaput oil, might be of use as a disinfectant in fever districts, a suggestion which has been justified by the results of the careful examination to which the eucalyptus has been subjected since its employment as a medicine. Some seeds having been sent to France in 1857, they were planted in Algiers, and thrived exceedingly well. Trottier, the botanical superintendent, found that the value of the fragrance of the tree as a sanitary means in fever or marshy districts was far exceeded by the amazingly powerful drying action of the roots on the soil. Five years after planting the eucalyptus, one of the most marshy and unhealthy districts of Algiers was converted into one of the healthiest and driest. Similar results have been reported from the Cape of Good Hope, Rome, Spain, and Portugal. Accounts are still wanting from Greece, India, Palestine, South America, &c. The eucalyptus seems to be capable of drawing its necessary supplies of water from a very considerable depth under the earth's surface, and exhaling great part of this from its leaves, thereby moderating the aridity of dry climates. This at least, seems to be the interpretation of Von Müller's prophecy, that the cultivation of this

tree would annihilate the rainless zone of the earth, and restore to Palestine its former fertility. The eucalyptus grows to a height of 400 to 500 feet, and Baron von Müller describes one 400 feet high and 30 feet in diameter, in the interior of which (the tree was hollow) three men on horseback could ride around. This belonged to the species *E. amygdalinus*. The tree is of rapid growth, and has a wide range of habitat. With regard to temperature it resembles the orange, which will endure for a short time a cold of a few degrees below zero (Centigrade), but is destroyed by any continuance of such severe weather.

NOTE.—It would have been more correct to designate these "vertical leaves" by the botanical term "phyllodes." They are not true leaves, but foliar expansions of the petiole, occupying the place of true leaves, and are very common in Australian plants belonging to the genera *Eucalyptus* and *Acacia*. The vertical position is especially characteristic of these phyllodes, and their peculiar effects of light and shade have been often remarked by travellers in the Australian forests. See Balfour's "Class-Book of Botany," 3rd edition, pp. 134, 135.

ORIGIN OF CHLOROPHYLL IN PLANTS.*

THE results of a careful investigation of this subject by Dr. Julius Wiesner, of Vienna, may be thus briefly summarised:—Chlorophyll is derived from etioline or xanthophyll, with which it so far corresponds that both are ferruginous organic compounds, in which the presence of iron cannot be directly shown. The fact that the elimination of carbonic acid by etiolated parts takes place to a greater extent in the dark than in such a degree of light as is favourable to the production of chlorophyll, and to the evolution of oxygen by the green parts of plants, renders it probable that carbonic acid has a direct action on the development of chlorophyll. The chlorophyll-producing rays begin in the red portion of the spectrum between Fraunhofer's lines A and B, and probably extend thence to the chemical or ultra-violet rays. The external portion of the red rays and the ultra-red, or heating rays, while they cannot originate a production of chlorophyll, may yet carry on the process when once this has been started by its appropriate rays. The degree of light necessary for the production of chlorophyll is the same for all the green organs in the same plant, though it differs widely in different plants. Up to a certain degree of intensity of light, the rate of chlorophyll-production rises; above this it gradually sinks, so that we may say there is a lower and a higher zero (in light) of chlorophyll-production. The spectroscope shows that the range of temperature within which chlorophyll can be produced is much larger than was formerly supposed.

NON-POISONOUS CHARACTER OF THE SALTS OF COPPER.†

M. Galippe endeavoured lately at the *Société de Biologie* to sustain this favourite paradox of his, in support of which he has been experimenting for the last five years. Although, as in the case of most paradoxes, the dispute seems to have been verbal rather than real, the whole question hinging on a very questionable definition of the word "poisonous," still, the experiments of M. Galippe certainly seem to go a good way towards proving his main points, viz., that the dangers of fatal poisoning from accidentally or criminally administered doses of most salts of copper are considerably exaggerated, since the disagreeable taste is nearly certain to indicate the presence of the drug long before the fatal dose is reached. The extent, too, to which he succeeded in producing tolerance of the drug in dogs is surprising, and would appear to indicate that this risk of chronic copper poisoning from the use of copper utensils, or the handling of copper or its salts in various trades, is not very great. However, M. Lépine remarked that possibly the tolerance of copper was an idiosyncrasy peculiar to dogs, just as tolerance of lead used (rightly or wrongly) to be attributed to cats. M. Galippe admitted that when salts of copper were administered to animals which were by nature incapable of vomiting, the latter in many cases succumbed.

NEW METHOD OF EXTRACTING IODINE FROM KELP.

By M. HERLAND.‡

IN a communication addressed to the French Academy of Sciences, the author observes that the introduction of con-

* Pharm. Centralblatt.

† *Moniteur des Produits Chimiques*, January 23, 1877.

‡ *Zeitschrift des allg. österr. Apotheker Vereines*, March 20, 1877, pp. 149-153.

* *Zeitschrift des allg. österr. Apotheker Vereines*, March 20, pp. 153, 154.

† *Repertoire de Pharmacie*, March 10, 1877, pp. 153-7.

‡ *Moniteur des Produits Chimiques*, January 23, from *Comptes Rendus*.

siderable quantities of Chilian nitrate of soda into the European market has seriously injured the coast industry of Finisterre, where soda and iodine are extracted from kelp by burning. It appears desirable that a more scientific method should find adoption, and the following is recommended as obviating existing defects. These defects are many. In gathering the seaweed no attempt is made to distinguish the species yielding most iodine; the drying of the kelp is effected in the open air, on the dunes, where it is exposed to the elements and the wash of the tide, and loses much of its saline principle; besides which incineration is itself a wasteful process, as not only is iodine volatilised, but the sea sand intermixed with the weed combines with the iodine, forming earthy alkaline silicates, and thereby entailing further loss. The author's method is conducted as follows:—The kelp is gathered in iron baskets or crates open at the sides and bottom, which are placed so as to be lifted by a revolving crane standing in the centre of a circle of vats filled with water mixed with good fresh quicklime, in the proportion of 50 kilogs. lime per cubic metre. The kelp is immersed in each vat in turn, and the process repeated with fresh kelp until the liquor in vat No. 1 indicates 4·3 to 4·5 degs. of the alkalimeter. During immersion an interchange of constituents takes place between the kelp and the ley, by exosmose and endosmose, the epidermis of the plants acting as a membranous diaphragm. The immersion in each vat lasts from 40 to 60 minutes. With a set of 10 vats, each containing 6 cubic metres, 50 kilogs. of fresh kelp may be lixiviated in 15 hours. The process concludes with the evaporation of the saturated ley to dryness, calcining the residue until fusion begins. The result is a soda extremely rich in soluble salts and iodine. The old method of burning gives, on an average, 15 per cent. of potash salts, and 1 per cent. iodine. The new method gives 45 to 50 per cent. of potash salts, and $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent., or where care is taken in the selection of the seaweed, as much as 5 per cent. of iodine. The waste and the clouds of smoke (a serious impediment to coast navigation) incidental to the old method are avoided, and the seaweed, retaining its nitrogenous principles and the lime taken up during immersion, becomes a valuable manure for sandy soils.

ACTION OF METALS ON WINE.*

SOME suggestive experiments were lately made at the Agricultural School of Montpellier to determine the chemical and organoleptic changes produced in wine by contact with various common metals. Plates, of determinate size and shape, of wrought and cast iron, sheet iron tinned, zinc, tin, copper, brass, gun-metal, and lead, were immersed, separately, in about half a pint of good, sound, two-year-old Bordeaux wine, for the space of 17 days. The weights of the plates before and after immersion, and the composition and colour of the wine and of the filtered precipitate, were duly noted in each case.

It was found that cast iron was most easily soluble. A cast-iron plate lost 0·8015 grammes per decimetre of immersed surface in 17 days. Taking this solubility as 100·00, the other metals stood as follows:—Wrought iron, 97·17; zinc, 92·07; lead, 6·26; tinned sheet iron, 2·90; tin, 1·59; gun-metal, 0·72; copper, 0·46; brass, 0·28.

Contact with cast and wrought iron produced a proportionately larger precipitate in the wine, which was rendered turbid by the formation of tannate of iron, and lost colour. Zinc and gun-metal caused a large precipitate. With zinc the wine became turbid, but showed no traces of *mycoderma vini*; with gun-metal it remained clear, but separated an enormous proportion of *mycoderma*; with tinned iron and tin an adhesive crust was formed, and with the latter a very large amount of *mycoderma* separated; with brass the precipitate was scarcely perceptible, the wine remaining limpid, with no traces of ferment; with lead the wine remained limpid, and *mycoderma* were in insignificant quantity.

The conclusions arrived at were that contact with all the commoner metals is injurious to wine, because (1) some, as iron, zinc and tin, occasion a large precipitate of the colouring principle; (2) others, like tin and gun-metal, produce a very large separation of fermentative matter; others, like iron and zinc, are speedily corroded; others, again, as zinc and lead, form deleterious soluble salts with the acetic acid in the wine.

Where the contact is likely to be prolonged, as with the fastenings, linings, &c., of vessels in which wine is kept, taps,

&c., if the use of metal is unavoidable, tinned iron is least objectionable, as it corrodes but little, and does not affect the colour; copper and brass may also be used, as their solubility is so slight that any deleterious salts formed by them in such cases will be insignificant in quantity. Where the contact is with large surfaces, and of shorter duration, as in some of the processes of wine-making, the formation of deleterious soluble salts is most to be feared. Here sheet iron, copper, brass, gun-metal, and tin are best, as being least readily soluble.



[The following list has been compiled expressly for THE CHEMIST AND DRUGGIST by G. F. Reiffers, Patent Agent, successor to L. de Fontaine-moreau & Co., 4 South Street, Finsbury, London; and at Paris and Brussels.]

Provisional Protection for six months has been granted for the following:—

- 638. J. C. Swan, of Dean Street, Newcastle-on-Tyne. An improved method of purifying the drainage from alkali waste. Dated February 16, 1877.
- 644. R. Little, of Greenock, North Britain. Improvements in preserving food, and in the means and apparatus employed therefor. Dated February 16, 1877.
- 647. T. Fletcher, of Redditch, Worcestershire. Improvements in needles for surgical and other purposes, and in cases or boxes for holding needles and other like articles. Dated February 16, 1877.
- 651. G. O. Topham, of Maida Vale, London. Improved means or appliances for preventing sea sickness. Dated February 16, 1877.
- 666. D. McFarlane, of Glasgow. Improvements in purifying or treating alcoholic liquids, and in apparatus therefor. Dated February 19, 1877.
- 674. M. E. Savigny and A. C. Collineau, both of Boulevard St. Denis, Paris. The manufacture of an improved vegetable colouring substance and the derivatives thereof. Dated February 19, 1877.
- 738. W. W. Macvay and R. Sykes, both of Castleford, Yorkshire. Improvements in the stoppering of bottles. Dated February 22, 1877.
- 761. J. Newnham, of Welbeck Street, Cavendish Square, London. Improvements in invalid beds or couches and appliances therefor. Dated February 23, 1877.
- 757. J. Howison, of Hurlet, North Britain. Improvements in treating aluminous substances, and in the apparatus employed therefor, the same being in part applicable for the manufacture of sulphate of iron. Dated February 24, 1877.
- 820. E. A. Paruell, of Swansea, Glamorganshire. Improvements in the manufacture of metallic zinc and of sulphuric acid. Dated February 28, 1877.
- 824. R. Turnbull, of Glasgow. Improvements in collecting and purifying sewage, and in the apparatus or means employed therefor. Dated March 1, 1877.
- 846. V. Collyer, of the Highfield House, Leicester. Improvements in preserving raw meat, lard, and other fats, and in compounds or combinations of ingredients for the purpose. Dated March 2, 1877.
- 860. J. Hanson, of Saville Town, near Dewsbury, Yorkshire. Improvements in treating sewage and other foul water, and in softening clarified water for re-use. Dated March 3, 1877.
- 879. S. B. Bowen, of Swansea, Glamorganshire. Improvements in and in apparatus for the manufacture of sulphate of iron or copperas from "pickle," and in the treatment of "pickle." Dated March 6, 1877.
- 919. A. R. Doyle and F. H. Stubbs, both of Leeds. Improvements in the means or apparatus employed for corking and uncorking bottles, jars, and other vessels. Dated March 7, 1877.
- 960. L. Rose, of Curtain Road, Finsbury, London. An improved stopper for bottles for containing gases, or gases combined with liquids such as aerated beverages, whereby improvements in stoppering bottles can be effected. Dated March 9, 1877.
- 978. W. Bull, of Knight's Hill, Norwood, Surrey. A new or improved portable combined miniature apparatus or machine for making and bottling aerated mineral waters or other aerated or effervescent liquids. Dated March 10, 1877.

* *Gaceta Industrial* (Madrid), November 10, 1876.

1059. T. G. S. McCarthy, of Montpelier Row, Brompton, London. Improvements in invalid beds, couches and chairs. Dated March 16, 1877.

Letters Patent have been issued for the following :—

3517. E. Remy and J. Denis, both of Louvain, Belgium. Improved means and apparatus for extracting starch from rice and other cereals or fecula. Dated September 7, 1876.

3640. C. E. H. Rogers, of East Retford, Nottinghamshire. Improvements in apparatus for disinfecting clothing and other similar articles. Dated September 18, 1876.

3676. N. Seward, of Riversdale, Templeogue, Ireland. A new mode of and apparatus for breathing warm air. Dated September 20, 1876.

3703. J. M. Richards, of Great Russell Street Buildings, Bloomsbury, London. Improvements in the manufacture of pills, and in the machinery or apparatus to be employed in such manufacture. Dated September 21, 1876.

3718. C. A. McEvoy, of Piccadilly, London. Improvements in inhaling apparatus, applicable also for diffusing perfumed and other vapours. Dated September 22, 1876.

3736. A. E. Herts, of Bloomsbury, London. Improvements in abdominal supports. Dated September 25, 1876.

3844. W. P. Tilton, of New York, America. Improvements in the preparation of matters for use in purifying syrups, oils, and other liquids. Dated October 4, 1876.

4795. W. L. Hubbell, of New York, America. Improvements in covers for boxes, hotties, pouches, lamp-fillers, and similar articles. Dated December 4, 1876.

4939. A. L. Normandy, of Albert Square, Clapham Road, Surrey. Improvements in distilling apparatus and in the mode of working the same; applicable also to produce aerated fresh water from salt water. Dated December 21, 1876.

4952. T. H. Copley, of Dunstable, Bedfordshire. Improvements in the manufacture of potash alum from aluminous rocks, earths, or substances. Dated December 22, 1876.

5061. C. Forrest, of Edinburgh, and A. Forrest, of Manchester. A new or improved machine for drying and powdering blood and excrementitious matter; also suitable for drying or evaporating saccharine and other solutions or materials, and for dissolving and mixing purposes wherein heat is required. Dated December 30, 1876.

22. S. Bennett, of South Hackney, London. Improvements in labels to be applied to pill boxes and other similar articles or receptacles. Dated January 2, 1877.

92. P. Picard, of Lausanne, Canton de Vaud, Switzerland. Improvements in the mode of evaporating saline solutions and in apparatus used for that purpose. Dated January 9, 1877.

Specifications published during the month :—

Postage 1d. each extra.

1876.

2629. E. Collins. Feeding bottles. 4d.
 2714. T. Rule. Stoppering bottles. 4d.
 2805. J. Mactear. Furnaces for the manufacture of chromates. 6d.
 3021. A. M. Clark. Washing barrels, bottles, &c. 6d.
 3033. W. E. Newton. Burning noxious gases. 6d.
 3069. J. Cockshott. Dispensing apparatus for chemists. 4d.
 3095. J. W. Slater. Deodorising and purifying sewage. 4d.
 3107. W. F. Grier. Compound for preserving food, &c. 4d.
 3117. W. T. Lewis. Stoppers for gaseous liquids. 2d.
 3136. G. Jewett and C. Rushworth. Stoppers for hotties. 2d.
 3143. I. Swindells and R. Lancaster. Manufacture of ammonia. 2d.
 3161. J. J. Thomas. Separating liquids. 4d.
 3170. J. Millar. Treating sewage. 2d.
 3188. H. Gardner. Bending wire fastenings for hottie stoppers. 6d.
 3256. W. Rushworth. Jar and bottle stoppers. 4d.
 3276. P. Griffin. Purifying and reducing whiskey. 2d.
 3287. J. Caldwell. Unguent for sores. 2d.
 3307. H. Staples. Purification of sewage, &c. 4d.
 3347. F. G. Morton. Treating paraffin, &c. 2d.
 3365. J. Frost. Purifying sewage and foul water. 4d.
 3379. W. Weldon. Lining furnaces for the manufacture of sulphide of sodium, &c. 4d.
 3380. W. Weldon. Manufacture of sulphide of sodium, &c. 4d.
 3381. W. Weldon. Reducing sulphates of soda and potash to sulphides, &c. 4d.
 3384. W. Weldon. Manufacture of sulphide of sodium and sulphide of potassium. 4d.
 3385. W. Weldon. Obtaining silicates or aluminates of soda and potash and sulphur or sulphurous acid. 4d.
 3386. W. Weldon. Obtaining phosphates and aluminates of soda and potash and sulphur or sulphurous acid. 4d.
 3387. W. Weldon. Obtaining caustic soda, &c., from sulphide of sodium and potassium. 4d.

3388. W. Weldon. Converting sulphide of sodium into carbonate of soda. 4d.

3389. W. Weldon. Obtaining carbonate of soda, carbonate of potash and sulphur. 6d.

3523. G. G. Bussey. Stoppering hotties, casks, &c. 6d.



BANKRUPTCY.

CHARLTON, EGNENT, 3 Clarendon Road, Notting Hill, physician. March 5.

LIQUIDATIONS BY ARRANGEMENT OR COMPOSITION.

Notices of first meetings of creditors have been issued in re the following estates. The dates are those of the "London Gazette" in which the notices first appeared.

COUPE, ASTIN, Langworth, Lincolnshire, surgeon's assistant. March 5.

PENN, JOSEPH WILLIAM, 13 Junction Street, Holloway, tailor and dispensary assistant, late 3 High Street, Hampstead, greengrocer. March 14.

HANCOCK, JOHN THOMAS, Fore Street, St. Mary Church, Devon, chemist. April 7.

MAUDE, SAMUEL WESLEY, Shepherd's Bridge, Nottingley, druggist and grocer. March 12.

ORPEN, RICHARD HUNGFORD, Roade, Northamptonshire, late Hanslope, prev. Barrow, surgeon. March 26.

PLUMM, WILLIAM, 53 Commercial Road East, chemist. March 8.

SCOTT, SAMUEL, trading as S. Scott & Co., Fairfield and Droylsden, near Manchester, chemical manufacturer. March 22.

TAYLOR, JOHN, 8 Bensham Place, Beulah Road, Thornton Heath, late Wakefield, chemist. March 24.

TOMLINS, JAMES, Newport, Salop, surgeon. March 26.

DECLARATIONS OF DIVIDENDS.

LANCASHIRE, JAMES (Liq.), Whitefield and Radcliffe, Lancashire, surgeon. 2nd and final div. 2s. 3d.; A. Murray, 104 King Street, Manchester.

WINTERBOTTOM, JAMES (Liq.), Oldham, chemist. 1st div. 4s.; H. Shaw, 2 Clegg Street, Oldham.

PARTNERSHIPS DISSOLVED.

CHRISTOE, W. H., W. H. jun., and J., Truro, analysts.

GALMOYE & GUTENSOHN, Bow Common Lane, chemical manufacturers.

HITCHCOCK, C. H., C. G., A. W. and E. L., Oxford, chemists (so far as regards Arthur William Hitchcock).

MITCHELL & HENDERSON, Barnard Castle, surgeons.

MANSON, CHAPMAN & CHAPMAN, Stock Orchard Terrace, Holloway, surgical instrument manufacturers.

MILNE & STOKES, Wandsworth Road, surgeons.

SINGLETON & WINDER, Birmingham, chemists.

WALKINGTON & WALKINGTON, Tenby, chemists.

SCOTCH SEQUESTRATION.

M'LAREN, JOHN, M.D., Glasgow. March 14, with protection.

Obituary.

DANDIE.—April 3, 1877, Mr. David Dandie, pharmaceutical chemist, Perth.

HAYTHORNTWHAITE.—March 12, 1877, Mr. William Haythornthwaite, chemist and druggist, Kirkby Lonsdale. Aged 59 years.

HULL.—March 11, 1877, Mr. Francis Hull, chemist and druggist, Leicester. Aged 86 years.

MARLOW.—March 16, 1877, Mr. James Marlow, pharmaceutical chemist, Lees, near Oldham. Aged 46 years.

MERRIKIN.—March 9, 1877, Mr. Edward Merrikin, chemist and druggist, Lynn, Norfolk. Aged 51 years.

PITTS.—March 9, 1877, Mr. Robert Christopher Pitts, pharmaceutical chemist, St. Giles Street, Norwich. Aged 62 years.

PROSSER.—March 4, 1877, Mr. Evan T. Prosser, pharmaceutical chemist, Witham. Aged 45 years.

SAGAR.—April 6, 1877, Mr. Stephen Carr Sagar, chemist and druggist, Swinton, Lancashire. Aged 66 years.

THOMPSON.—November 10, 1876, Mr. Richard Thompson, chemist and druggist, St. Helen's, Lancashire. Aged 55 years.



For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.

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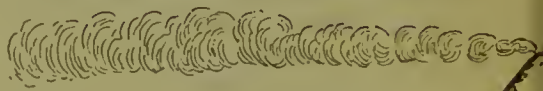
IMPORTANT TO CHEMISTS AND DRUGGISTS.

FOR PARTICULARS OF

THE

ANALYSED TEA ASSOCIATION,

See Page 41.



Editorial Note

THE NEW BANKRUPTCY BILL.

THE provisions of the new Bankruptcy Bill lately introduced into the House of Lords seem satisfactory in principle and generally skilfully draughted as to details. We have already urged that the practical necessity which the working of the existing Act has made obvious is that the several steps of a bankruptcy or liquidation should be more directly under the controlling influence of the Court than at present. It is an act of great self-sacrifice for an individual creditor under present circumstances to face the expense and labour of opposing the offer, whatever it may be, which a debtor may think fit to make. The consequence is that debtors, as a rule, presume upon the laxity which thus arises, and grow continually more audacious in the absurdity of their offers. The bill now before Parliament evidently recognises that this is the main difficulty, and the following system is suggested. It is proposed to abolish altogether petitions for liquidation by arrangement or composition, and to recognise only bankruptcy petitions—these to be presented either by the debtor himself or by any creditor or creditors with unsecured debts reaching 50l. The Court will call the meetings of creditors, and will itself provide an officer to pre-

side over such meetings. The creditors may, if they so decide by proper majorities, sign a deed of arrangement which will be the same to the debtor as the present liquidation by arrangement, but the bill provides that this deed is not to be executed if the composition to be paid is less than 5s. in the pound.

Provision is made for the Court to call a preliminary and somewhat informal meeting of the creditors of any estate in bankruptcy previous to the first general meeting, the object being apparently that creditors may get a good general idea of the position of the debtor's affairs, and be prepared with their views at the general meeting. The obligatory appointment of a committee of inspection from among the creditors (not to exceed five), with an allowance, for the purpose of investigating the debtor's affairs, and with orders to report the result of their investigation to the Court, is a good proposal. The report of this committee will be before the first general meeting, which may then resolve on—(a) further investigation, (b) a deed of arrangement, or (c) bankruptcy. A curious arrangement is offered in regard to the discharge of debtors. Where the application for discharge is made before the expiration of twelve months from the first meeting of creditors it must be assented to by a majority in number, and three-fourths in value, of the creditors. Where the application is after twelve months, and before the expiration of eighteen months, the assent of a majority in number and in value only will be required; and after eighteen months, and before the expiration of twenty-four months, one-third in number and value of the creditors will be sufficient. Where twenty-four months have expired, a fourth in number and value of the creditors will be required, and after the expiration of thirty months the application need not be concurred in by any of the creditors. Under the deeds of arrangement, the question of the discharge will necessarily be one of the terms of the deed, otherwise the debtor would prefer and insist on bankruptcy.

The terms of remuneration of trustees are fixed in proportion to the extent of the estate and the amount of debts collected, and the principle of giving a general supervision to the Court seems to be so abundantly the ruling principle of the bill that it may even be doubtful whether the frequent opportunities of application to the Court which are provided will not be considered by some critics the flaw in what seems to us to be an honest attempt to remove a monstrous evil.

PROCTOR'S MEDICINE MEASURES.

We described and illustrated this small invention in our last issue. Since then a paper introducing them to the Pharmaceutical Society has been read at an evening meeting at Bloomsbury Square, and much competent criticism has been elicited. In his paper Mr. Proctor described the well-recognised uncertainty of the capacity of a tablespoon, and remarked on the present system of marking graduated measures for the public. The glasses are divided as they should be, into ounces and drachms, but they are marked as they should not be, by tablespoons and teaspoons. He leaves it an open question at present as to how his medicine measures should be branded, but what he expressly claims as important is that each measure should contain an exact dose and that only, of the medicine which it accompanies. He himself seems to propose to *give* the measure with every bottle of medicine he sends out.

Mr. Proctor's suggestion met with but scanty favour from the authorities who discussed it. Mr. Greenish thought the variety of measures a chemist would need to keep in stock would be the objection. To his mind the one graduated glass indicating all doses was the most convenient. According to Mr. Bland, the expense of furnishing such measures gratuitously was the chief objection. Mr. Long thought expense was no object, but he failed to see how accuracy was to be ensured in these

measures, and he perceived also that thick medicines would be likely to stick to the sides of the measure. Besides, he was sure that nine people out of every ten would slop their medicine over the sides. Mr. Martindale and Mr. Plowman spoke of the expense of providing measures for hospital out-patients, and Professor Redwood pictured the regiment of various sized measures which would accumulate in a physic-taking household, to the alarming danger of subsequent patients.

Without desiring to assume the championship of Mr. Proctor's medicine measures, we cannot avoid expressing our surprise at the absence of any appreciation of these measures in a company of dispensers so eminent as those whose names we have quoted. We are quite certain that every one of the gentlemen who spoke on this subject has many times gone through the process of instructing a novice in the art of using a graduated measure. That chemist is curiously callous who finishes his lesson without an inward shudder at the prospects of the patient. The pharmacist who has handled graduated measures from his youth upwards is hardly able to appreciate the perplexity of a nurse or an invalid who employs one of these instruments of precision for the first time. It is for such people, as we take it, that these simple measures have been designed. Dr. Redwood's objection seems to us to be a rather far-fetched one. Everybody has a stock of various-sized vessels in his house, but we do not understand why he should be likely to insist on seeking for one of an incorrect capacity, especially if the correct measure be sent with his medicines. Sticky medicines will stick to the measure, no doubt, but that seems to be an argument against sticky medicines rather than against the measures. As to the expense, the druggist must judge for himself whether this extra attention to his customer's safety will ensure him sufficient remuneration. That point is not a difficulty at all. It seems to us that the high critical faculties which pharmaceutical discussions have developed in late years are being carried in this and other instances to an unnecessarily fine point.

A PHARMACY ACT IN VICTORIA.

By the last Australian mail we have received copies of two Acts passed on December 22 last, and coming into force on January 1 of this year, the one called a "Pharmacy Act," and the other a "Sale and Use of Poisons Act." Read together they bring Victorian pharmacy very closely in harmony with its condition in the mother country, but there are a few important points of difference which will be noticed as we summarise the provisions of these enactments. The Governor in Council appoints the first Board of Pharmacy, which is to consist of a president and six other competent persons. This Board will exist for three years, and will itself provide for subsequent elections. All chemists and druggists and homœopathic chemists in business for two months before January 1, 1877, are eligible for registration, and any dispensing assistant who has been such for not less than three months before that date is likewise eligible. The Minor or Major certificate of the English Pharmaceutical Society will also be received as sufficient evidence of competency, and the diploma of any college or board of pharmacy which the Victorian Board may choose to recognise. For either of these registrations a fee of two guineas will be charged. Dispensers in hospitals or public institutions who had been so engaged for not less than three years might also be registered. Apprentices whose term (of not less than three years) commenced three months before January 1 will be admitted to a modified examination. The conditions on which other persons will be admitted to registration are a four years' apprenticeship, attendance on one course of lectures, and passing examinations at the University of Melbourne or other recognised college, in the subjects of materia medica and medical botany, and practical chemistry, besides an examination in practical pharmacy before the Board

itself. The fee for examination before the Board will be 3*l.* 3*s.*, and for registration 1*l.* 1*s.*

After the passing of these Acts, no unregistered person will be allowed to assume the titles of chemist and druggist, pharmaceutical chemist, homœopathic chemist, or similar ones, under a penalty of ten pounds, and a liability to six month's imprisonment. The same penalty may be imposed on any "registered pharmaceutical chemist, or person in the employ of such chemist, *who prescribes or practises medicine or surgery* except in accordance with any rights and privileges hitherto enjoyed by chemists and druggists in their open shops."

The sale of poisons scheduled in the Act, which corresponds nearly to our own list, is to be confined to qualified medical practitioners and registered pharmaceutical chemists, under a penalty of twenty pounds. But an exception is made in respect to districts four miles from any pharmacy, where licenses to sell poisons may, under certain restrictions, and at the rate of a pound a year, be granted to other persons. This is not to apply to homœopathic preparations of a strength not greater than the third decimal, nor to patent or proprietary medicines, nor to fly papers or packets of vermin killer, except poisoned seed, nor to medicines supplied by veterinary surgeons.

It is clear, especially from the passage we have italicised, that the medical practitioners have had an abundant share in the construction of these Acts: we wait to learn whether the conduct of them will be entrusted mainly to them, or whether pharmacutists will be thought sufficiently competent to manage their own affairs.

PRESERVATION OF LEMON JUICE.

In connection with this substance the fact ought to be noticed that the practice of preserving it by such agents as sulphurous acid and bisulphite of lime seems greatly on the increase. Their value as preserving agents under certain conditions is undoubted, but a serious remonstrance ought to be made against their introduction surreptitiously into either lime or lemon juice. Not even the fact that they will preserve the juices for a considerable length of time justifies their use, but far less is the act justifiable when it is almost certain that sooner or later oxidation will take place, and sulphate of lime and free sulphuric acid respectively be formed.

CANE AND BEET SUGARS.

THE adulteration of commercial sugars with such substances as sand, gypsum, chalk, starch, and so on, mentioned in most of the older handbooks of chemical analysis, must now be considered obsolete, and if adulteration be at all indulged in it is, we must confess, conducted on more scientific principles, for we have failed after many trials to find that any other impurity is ever present, even in the more common qualities, than what might be considered purely accidental. The prejudice, however, which various writers have exhibited against beet-derived sugar caused us to make inquiries when lately conversing with a sugar refiner of great experience as to the foundation for its existence, with some degree of minuteness. We had, previously to this, tried both by scientific and practical tests, to ascertain if any difference could be detected between the two kinds. With the raw sugars the difference in taste, smell, keeping properties of manufactured syrups, and chemical reactions, were very marked, but with the refined crystals we had absolutely failed to detect the slightest difference whatever.

Further, several chemists skilled in the analysis of sugars, with whom we communicated on the subject, all ridiculed the idea of their being such difference, whilst, as regards other authorities, it is Mnspratt, if we remember rightly, who positively asserts

that of the two the beet is the finer sugar. In face of this, however, the sugar refiner held that it was not difficult to distinguish between the two kinds, not by strictly chemical test, as he knew of none, but by simple experience, or some unnameable faculty which experience gives. Confectioners and preserve-makers apparently possess this intuitive power, for they positively refuse to have the beet sugar at any price, and consequently the pure cane is almost entirely employed for their purposes.

Beet sugar, it should be noted, is never sent into the market in a pure state. It is always mixed previous to recrystallisation with cane sugar, generally in the proportion of two parts of the former to one of the latter.

It may interest those who are familiar with the composition and properties of whiskey toddy to know that beet sugar can at once be detected in the compound by a peculiar greyish-black appearance which it confers on the mixture. We give this test, however, with all due reserve, for we confess to having no practical knowledge of it, nor are we without doubts of there being some confusion here as to the relation existing between cause and effect.

TINCTURE AND WINE OF QUININE.

ALTHOUGH the tincture of orange peel (in its various forms) is an agreeable and at the present time popular vehicle for the administration of quinine, it must be admitted that so far as the above preparations are concerned the official formulæ for both are somewhat unsatisfactory. If great care be not exercised in preparing them, and even where this care has been exercised, a considerable sediment will ultimately be thrown down which will be found on examination to contain more or less of quinine, and which of course necessarily impoverishes the preparation of its most active ingredient. The nature and cause of this deposit, so far as the tincture of quinine is concerned, have been very fully investigated, and the subject is now probably pretty nearly exhausted, but we are not aware that much attention has been given to the deposit formed in the far more popular if less important wine of quinine. Everyone who has prepared the wine according to the Pharmacopœia formula must have noticed immediately after effecting solution of the quinine the formation of a brown flocculent precipitate, varying probably with different orange wines somewhat in quantity, but always considerable and always of the same appearance. The precipitate is annoying, especially to makers of large quantities of the wine, as it both necessitates filtration and renders the process tedious. Moreover, a second deposit after a time almost invariably again forms, which, although smaller in quantity, is even more troublesome if it appears, as very probably it may, after the preparation has been bottled and stored. To determine the nature, cause, and extent of this precipitate, a series of investigations were undertaken, the result of which may be briefly summarised as follows, viz.:—1st. The precipitate was found to be principally tannate of quinine, along with extractive and colouring matters. 2nd. The quinine recovered from the deposit varied in quantity, but was frequently found to form a large percentage of the quinine originally added to the wine. And 3rd. The deposit continued to form so long as any tannin was found to exist in the wine, after which the addition to any extent of more quinine and citric acid gave no further precipitate. The raisins from which the wine is generally fermented were at first suspected as being the primary cause of the presence of the tannin, but from further inquiries it was ascertained that tannin is very generally employed to clarify the wine in certain stages of the process of fermentation, and that the excess of tannin thus added is afterwards removed from the wine by the addition of isinglass. This process, even where carefully conducted, seems at the best to partake a good deal of the rule of thumb

procedure, the principal care apparently being not to add too much of the isinglass, excess of which in the wine is in some respects even more objectionable than the tannin. Of many plans which have been tried to rid the wine of the superfluous tannin, none have been altogether successful which have not in some way or another been objectionable, so that we have come to look upon quinine wine with considerable suspicion. Even when honestly prepared, which we are sorry to say it very seldom is, it is apparent that the quinine which it contains must ultimately be an unknown factor, whilst it has this further serious objection, that in too many instances it contains also an unknown quantity of alcohol. The Pharmacopœia states that it contains about 12 per cent., but this will be found insufficient to keep it from decomposition, and as a matter of fact most commercial orange wines contain double this percentage of alcohol, and even in some instances we are aware they have contained more, thus exceeding in strength even a fortified sherry.

THE ALLEGED INACCURACY OF ENGLISH DISPENSING.

The startling statements in regard to the faultiness of English dispensers made last year by two analysts in the North of England have been referred to by several foreign journals, but in one case the druggists have found a quite disinterested champion who challenges the conclusions come to, and seems pretty fairly to have upset them. The *Philadelphia Medical Times*, having summarised the results of the investigation made by Thompson, of Manchester, as published in full by ourselves, the same journal on February 17 contains a few comments on that "elaborate paper," written by Mr. Charles Smart, captain and assistant-surgeon in the United States army.

The specification in the matter of the zinc lotion, Mr. Smart says, is not given sufficiently in detail in the *Philadelphia Journal* to make out a case of inaccuracy against druggists in general, the great point against them seeming to rest on the iodide mixture.

"It seems strange," Mr. Smart continues, "that Mr. William Thompson, F.C.S., should have chosen an article notoriously impure for his *experimentum crucis* in determining the degree of accuracy displayed by druggists.

"The purest specimen of potassium iodide which I have analysed (manufactured by E. R. Squibb) showed the absence of bromide, a trace of iodate and of soda, and the presence of carbonate and chloride, the analysis running thus:—

Iodide of potassium	97.327
Chloride of potassium .. .. .	.265
Carbonate of potash	1.121
Deliquescent and interstitial water	1.287

100.000

"Now, had Mr. William Thompson, F.C.S., dispensed his mixture (120 grains iodide in six ounces of water) from a bottle of this comparatively pure article, he would have found by analysis that he was 3.208 grains short of the quantity prescribed.

"Wood and Bacho, in the 'Dispensatory' which lies on every dispenser's counter, say that 'carbonate of potash is generally present in the proportion of from one to ten per cent.' Dr. Christison has detected 74½ per cent., and Dr. Pereira as high as 77 per cent.

"And, since such is the case, what does this charge against the dispenser amount to? I have no doubt that, as in all professional and business occupations, carelessness and the desire of gain will, in a few exceptional cases, creep in to taint the action of the dispenser. I must say, however, that my personal experience of drug-clerks in Scotland and in this country has led me

to consider them in the line of daily duty as most conscientious men.

"The fact that thirty-four of the eighty-one druggists gave more, and forty-five less, than the exact quantity, while the sum total shows a deficiency of 220½ grains, only proves, in view of the impurity of the article ordered, that so many druggists gave what is called in business 'good weight.'

"Mr. William Thompson's experiment has a fallacy at its bottom, and in justice to the dispenser I object that the odium of such unscientific conclusions should be cast upon his shoulders."

THE ADULTERATION OF DRUGS.

In the last issue of the *Analyst* Mr. Dupré, the public analyst for Westminster, is good enough to publish his experience regarding the purity and strength of the drugs and medicines dispensed in London. He states that during the last five years he has carefully examined 165 samples of drugs and medicines bought at the better class of chemists' shops in all parts of London. Out of these 165 samples no less than seventy-one, he declares, were adulterated, some to a very considerable extent. Assertions of this kind are received very calmly now. How many of these seventy-one cases of adulteration did Mr. Dupré bring before the magistrate? We never heard of but one—the spirit of nitre case—and we should very much like to know whether this eminent analyst includes that in his would-be sensational category.

FRIENDS IN COUNCIL—WANTED.

SEVERAL of the candidates for the Pharmaceutical Council publish in our advertisement pages expositions of their views. This course will be welcomed by a large number of electors, who are at last beginning to object to vote for mere names. "Measures, not men," will have to be the motto of pharmacists in these elections. The fact that at the last meeting of council no reference whatever was made (or, at least, is reported to have been made) to the vital struggle on which the trade has just entered, is at any rate abundant proof that at present the members of the society are by no means accurately represented at the council table. It is impossible to imagine any other score of pharmacists meeting together just now, with a view to promoting the welfare of the trade, without taking notice of such a prominent subject. This reticence and the unfriendly tendency which the *Pharmaceutical Journal* has manifested seem to indicate a deliberately chosen policy. It is not the first time that the council has been unable to see the forest for the trees, but the moment is opportune. It is our own fault if we fail to elect men who will support what we, if we are the majority, believe to be our interests. Both at the annual meeting and at the election the members of the society will have an occasion to show what they are thinking about, and we hope that even yet the other candidates for the council will give electors a chance of judging of their opinions and their consequent fitness to become representatives at this most important crisis.

The Pharmaceutical Council must not be looked to as the thick and thin supporter of every measure which might seem beneficial to the trade. It has a duty towards the public as well as towards chemists. But it is nothing at all if it is not first of all the voice of its members. We have a right to expect also that the council, possessing, as it does, the exclusive right of executing the Pharmacy Act, will carry it out in accordance with the obvious intentions of our legislators. We want men in the council who will undertake the work as work, and not merely as a pleasant way of spending a day or two monthly. The recent attacks have made the trade more serious about the policy of their governors, and the council will have to recognise this.

THE RIGHT OF COUNTER PRESCRIBING.

IT is not necessary for us to say anything to awaken chemists to an appreciation of the serious nature of the attack which is now being made upon them by a section of the medical profession. The time has most certainly arrived when the whole of the trade, from one end of the kingdom to the other, must combine in one united phalanx to resist the extraordinary encroachment which is now more than threatened upon their rights. We say their rights advisedly, because, although it is true that the law for the moment has declared that a chemist and druggist acts illegally if he advises with a customer as to the most desirable medicine to be taken under certain circumstances, the moral right, as it seems to us, would remain in spite of a thousand laws. When fully comprehended, the point appears to us to be one of the most unteachable in reason which has ever been maintained before a court of law. We have in our mind a chemist and druggist who keeps an open shop for the sale of various drugs, of the nature of which he knows at least something. We assume that he makes no representation of any kind whatever calculated to create a false impression as to his attainments in the opinion of the public. A customer who is perfectly well aware that he is not applying to a qualified medical man, but who thinks the chemist is sufficiently instructed to suit his immediate requirements, asks him to supply him with one of his commodities, the best suited to a particular need; and if the chemist does this most simple, most honest, and most natural of all transactions, he renders himself liable to a prosecution and a penalty of 20*l*.

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One of the most eminent judges in the land has declared this to be the correct interpretation of the Apothecaries Act of 1815. His dictum certainly astonished the apothecaries as much as it did the druggists, but it will not be upset by the Court of Queen's Bench unless the evidence against it is very forcible indeed. We can hardly wonder that the judge of the Nottingham County Court should have felt himself bound to follow the law as laid down by Baron Bramwell, though we think he would have shown a better apprehension of the case before him if he had simply given his decision without encumbering it with subtle distinctions between dispensing and prescribing. Baron Bramwell has said that if a chemist gives a person a simple draught for a headache he infringes the Apothecaries Act. That statement is perfectly definite, and, so long as it remains uncontradicted by a higher authority, must be regarded as the exposition of the law.

* *

The logical conclusion of such a law is that no one except an apothecary has a right to recommend medicines or treatment of any kind. He is to have and enjoy all the rights, profits, privileges, and advantages which can be extracted out of our diseases. You are not permitted even to do without any advice at all, as the poor "Peculiar People" found out to their cost a year or two ago. The theory is monstrous. The apothecaries will probably be graciously pleased to permit the old women to continue the distribution of their ancient recipes, but even that they can stop if they please. But chemists' counter prescribing interferes too much with their profits. This must therefore be stopped. The question is one in which the public is not altogether uninterested.

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What in the name of the English language did the exemption clause in the Apothecaries Act refer to if not to the practice of counter prescribing? That clause says distinctly that chemists

and druggists "shall and may carry on their business, in such manner, and as fully and amply to all intents and purposes as the trade or business was carried on before the passing of this Act." Sixty years are allowed to pass by. It is now difficult to procure satisfactory evidence as to how the business was carried on in that distant period; but it is not quite too late. Mr. Thomas Wm. Parsons, 84 years of age, gave this remarkable evidence at Nottingham:—"He was apprenticed to Messrs. Blews, chemists and druggists, of Worcester, in 1809, and from there he went to a London firm of chemists, afterwards setting up in business in Leicester on his own account. He said that when he first went into the trade it was the custom of chemists and druggists to prescribe over the counter for persons who suffered from sore throats, or ailments of that kind." That testimony is overwhelming. The apothecaries have not and cannot adduce one single fragment of counter-evidence, and, though the Nottingham court thought fit to ignore its relevancy, we venture to predict that the Court of Queen's Bench will regard it very differently.

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How came that exemption clause to get into the Apothecaries Act? That the apothecaries did not put it there of their own spontaneous generosity we may take for granted. The society at Blackfriars could doubtless enlighten us considerably if it should be their good pleasure to do so; but, in the absence of their obliging assistance, we must obtain our knowledge from other sources. Dr. Frederick Davies, in his work on "The Unity of Medicine," thus describes the passing of this Act. An association calling itself the Associated Apothecaries was formed early in the present century for protective purposes. "It was their primary intention to apply to Parliament through the medium, or at least with the concurrence, of the Colleges of Physicians and Surgeons and the Society of Apothecaries. Each corporate body declined at first to interfere; but, a bill having been framed by the association, an opposition proceeding from all quarters, *as well druggists* as physicians, surgeons, and apothecaries, caused many alterations, erasures, and *interpolations*." Ultimately, "a bill arranged by the Society of Apothecaries, in conjunction with the College of Physicians, was hurried through Parliament in the year 1815." So it is evident that the druggists of that period saw that the apothecaries were threatening some part of their business, and it is equally clear that the apothecaries recognised the necessity of meeting the objections of the druggists. The opposition raised by the druggists is more officially proved by the following entry in the Journal of the House of Commons, dated March 10, 1815:—"A petition of chemists and druggists residing in the cities of London and Westminster and the neighbourhood thereof was presented and read, taking notice of the bill for enlarging the Charter of the Society of Apothecaries in the City of London, granted by His Majesty King James the First, and for better regulating the practice of apothecaries throughout England and Wales, and praying that they may be heard by their counsel or agents against certain parts thereof. Ordered that the said petition do lie on the table." These citations, we think, throw some light on the mutual relations of apothecaries and druggists in 1815, and are consequently valuable collateral evidence in respect to the exemption clause in the Apothecaries Act.

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Now it depends on the druggists themselves whether this vital question shall be fought out to the end. The existence of a well-organised Defence Association has made us sure, at least, of getting our case well stated. But an income of less than 1,000*l*. a-year will not pay for many victories even, not to mention the defeats which lie on the path. If the trade means

to continue its existence, if it cares to maintain its independence of medical control, if it has faith in its own honesty of purpose, its members must now recognise that the time has come to fight. And to fight successfully all must combine. The case may have to be carried even to Parliament before it is ultimately settled. The organisation is formed for conducting the warfare; if the trade through apathy lets its interests be trampled upon, it will deserve to become what the country doctors would have it—a mere foot-stool by which to elevate their dignity.



SETTLEMENT OF THE MILK OF SULPHUR DISPUTE.

VICTORY OF THE TRADE ASSOCIATION.

THE appeal against the decision of the Runcorn magistrates, promoted by the Chemists' Trade Association, was heard at the Knutsford Quarter Sessions, on April 2 and 3, before Horatio Lloyd, Esq., chairman of the Bench (Recorder of Chester), Lord de Tabley, Sir Hardinge Giffard (Solicitor-General), Sir Richard Brooke, Sir Gilbert Greenall, M.P., Hon. W. Egerton, M.P., Sir Watkin Wynne, M.P., and other magistrates.

Nominally the case was Marshall, appellant, against the Justices of Runcorn. Mr. Higgins, instructed by Mr. Glaisyer, LL.B., appeared for the appeal.

Mr. Higgins first of all read a letter from the magistrate's clerk at Runcorn intimating that they had decided not to appear, but to leave the police to support the conviction if they should think proper. Mr. Higgins explained to the Bench that many cases were waiting for decision as the result of this trial, and that the Chemists' Trade Association were very anxious to have the matter fully investigated.

The CHAIRMAN remarked that probably the police declined to act because their might be some question about costs. On calling Superintendent Steen, the latter said he had not instructed anyone to appear for him. Although nominally the prosecutor, he was really only a witness in the case.

The Chairman ultimately postponed the case till next day, telling Mr. Steen that there was power to pay his costs, and advising him to instruct counsel meanwhile.

Mr. HIGGINS remarked that he had thirteen witnesses present, and that the cost was very heavy to the association.

On the next day Mr. Marshall, barrister, announced that he appeared for the police. He asked for an hour's delay to consult with the analyst. After some objection this was conceded.

Mr. MARSHALL then stated the facts of the case, and after the evidence of Steen as to the purchase of the substance in question, called J. Carter Bell, who said he found 58 per cent. of sulphate of lime, the whole of which he regarded as an adulteration. Milk of sulphur, in his opinion, should be all pure sulphur. He had quite recently purchased 50 samples in Manchester, Salford, and Chester, and had found 45 of them quite pure.

Cross-examined by Mr. Higgins: You say you bought fifty samples at Manchester, Salford, and Chester?—Yes.

You have said there was adulteration. Do you consider this an adulterated article?—Yes.

I suppose you know "adulteration" is not defined in the Act?—I believe so.

How do you define adulteration?—Anything added to the substance to debase its quality is adulteration in my eyes.

That is how you define it?—Yes.

There is a preparation known as precipitated sulphur, is there not?—Precipitated sulphur is known, certainly.

And the words "precipitated sulphur" appear in the Pharmacopœia?—They do.

Now, in your opinion, is precipitated sulphur in every respect synonymous with milk of sulphur?—Yes.

So, if a person asked for milk of sulphur, it would be quite right to give him precipitated sulphur?—Quite right.

The CHAIRMAN: Then, in your opinion, precipitated sulphur is pure sulphur?—Milk of sulphur is pure sulphur.

The CHAIRMAN: And precipitated sulphur is pure sulphur?—It is the same thing. It is a synonymous term with milk of sulphur.

Cross-examination resumed: You know Dr. Redwood by name?—I do.

You know he is a professor of chemistry at the Pharmaceutical Society?—I do.

And I suppose you admit that he is one of the best authorities on any question on pharmacy?—No, I don't. (Laughter.) I don't call him the best by any means.

You are a public analyst, I believe?—I am.

Have you any experience as to the drug trade?—Do you mean in selling drugs?

In making pharmaceutical preparations or selling drugs?—Not the slightest.

Neither wholesale or retail?—No.

Neither have you gone through any course of pharmacy?—Not pharmacy.

Materia medica?—No.

And I suppose you are not a medical man?—No.

And the evidence you give here is as a professional chemist, and as a professional chemist only?—That is all.

That being so, Mr. Bell, suppose Dr. Redwood and some other gentlemen who have made a special study, a life study, I may say, of materia medica, say that these two words are not synonymous. You would say they are wrong?—I should say so because I can bring them before better authorities.

You know Dr. Redwood is editor of the Pharmacopœia?—One of them.

A series of questions followed as to the processes ordered for the preparation of lac sulphuris and sulphur præcip. in the various Pharmacopœias from 1721 to 1867. Mr. Bell admitted that at one time the authorities seemed to give the preference to the compound containing lime "because they did not know better." The witness denied that the lime preparation mixed better with water than did pure sulphur præcip. He also denied the assertion that sulphur præcip. produced irritating diarrhoea. Asked if the Pharmacopœia contained the list of all medicines and medicinal compounds, Mr. Bell said he was not a medical man, and was, therefore, not competent to speak on the point, but he admitted that the fact of milk of sulphur not appearing in the Pharmacopœia did not prove that it was not a medicine. The sulphate of lime contained in milk of sulphur was not the same as plaster of Paris, because the latter was calcined, but the former contained two equivalents of water. He considered sulphate of lime injurious to health. It constipates the bowels.

Re-examined by Mr. Marshall: His opinion coincided with that of Dr. Muspratt, that the adoption of muriatic in place of sulphuric acid in the preparation of precipitated sulphur, was a great improvement.

And since the addition of that constitutes a difference in the manufacture, ordinary milk of sulphur used before becomes precipitated sulphur since that time?—Yes.

You find that the words "milk of sulphur" and "precipitated sulphur" are for practical purposes identical?—Yes.

You have been asked whether all medicines are contained in the Pharmacopœia, and you said "No"?—No, they are not.

Considering that milk of sulphur is very commonly used, would you not expect to find it in the Pharmacopœia, unless it were identical with the name of precipitated sulphur?—I should expect to find it under the name of precipitated sulphur. Do you mean mixed with the sulphate of lime?

I am afraid I don't make myself very plain. You say they are identical?—Yes.

Do you say that practically in the Pharmacopœia you find them under the same name?—Precipitatum sulphuris.

I understand you to say that sulphate of lime has a tendency to constipate, according to your opinion?—A tendency.

And would neutralise each other?—That would depend on the relative quantity of each.

Does it become more easily soluble in water?—No, sulphate does not dissolve in water.

You have been asked whether you could get a mixture of precipitated sulphur in water. Have you any doubt that it would not mix with water?—Not any.

What do you find used by medical men in their prescriptions?—They use pure precipitated sulphur, or pure milk of sulphur, synonymous terms. It has got three names, and medical men would generally prescribe sulph. præcipitatum.

And they would expect to have pure sulphur put in?—Yes, the prescription gives nothing about sulphate of lime.

In reference to the composition of plaster of Paris, do I understand there is no difference between its constituents and those of sulphate of lime, with the exception of the extraction of water?—Not any.

The effects of both on the system would be practically the same?—Exactly.

And you say that the impurities, in what you call pure sulphur, do not amount to more than one or two per cent.?—Not more.

By Mr. Higgins: You say you have collected fifty samples of this preparation?—Yes.

When was that done?—About a fortnight ago.

After these prosecutions?—Yes, and I have also got a lot—at least, our inspector got them—about twelve months ago.

Is your inspector here?—No.

Then we cannot have that. You got some before the cases were heard at Runcorn?—Yes.

You yourself?—No.

Mr. MANSHALL: That is our case.

Mr. HIGGINS: Our case is shortly this. I appear on behalf of the appellant in this case, and I think I should say, before going into the merits of the case, that it is defended by the Chemists' and Druggists' Trade Association, which takes up cases of this sort whenever they think any of its members have been prosecuted without a just cause, and I am particularly asked to say this—that they do not, and that they never have, nor do they intend to take a case up of any chemist who simply is prosecuted for adulteration when it is clearly intentional adulteration, and it is only quite recently that they have withdrawn from cases where they thought there was an act of adulteration. We fight this case here as a test case, because there has been a number of prosecutions for this particular article. It has been much discussed by gentlemen scientifically and medically connected with the trade, and so we are desirous to get a decision. I make these remarks to show you that we do not protect persons who really do adulterate articles and impose upon the public. The appellant in this case is a chemist of considerable reputation in Runcorn, and has been there for 15 years. He holds several public appointments there, and there can be no doubt whatever that he sold this article as an article of commerce. At other places in the country—London, and other places—they have been selling the same article in large quantities, and the quantity sold of this drug is much larger than the quantity sold of pure sulphur. This drug you get in two ways, and I shall call witnesses to prove that when their customers have asked for milk of sulphur, and they have been served with pure sulphur, they have brought it back again, and complained that it is not what they wanted. They wanted the real milk of sulphur, and would not have the pure sulphur at any price.

The CHAIRMAN: What you say is simply this—there is a drug which is known as milk of sulphur, that has been known as something else? There are two according to you?

Mr. HIGGINS: There is a drug which at one time was known as milk of sulphur, and that referred to two things—a compound with lime, and a compound without lime, which is proved by the Pharmacopœia of 1721, and we say further that medical men who studied materia medica at that time concluded that the best process or compound was that which contained sulphate of lime, and therefore the other was dropped altogether, and we have for sixty or seventy years nothing but the compound containing lime; and it is perfectly true that the compound has been spoken of both as milk of sulphur and as precipitated sulphur; therefore in a certain sense the two terms are synonymous. If a person asks for milk of sulphur, it is perfectly right; he can have either the pure sulphur, or that containing lime; but if a man asks for precipitated sulphur, he must have the pure thing—that which contains no lime because it is so mentioned in that form, and so defined in the Pharmacopœia. The compound milk of sulphur has been defined by the early Pharmacopœia as a compound containing lime, and there has never been, since first it has been in the

Pharmacopœia, down to the latest British Pharmacopœia, a description of milk of sulphur which does not describe it as containing lime. I shall also prove that from that time for a great number of years the compound has been sold in large quantities, as milk of sulphur, which has always contained lime, and it is only when these prosecutions take place under this Act that we find chemists are beginning to sell the pure sulphur. Even now a much larger proportion of the other is sold, simply for the reason that the public will not have anything else.

The CHAIRMAN: The article sold in this case was milk of sulphur?

Mr. HIGGINS: Yes.

The CHAIRMAN: If pure sulphur had been asked for, he would have sold precipitated sulphur?

Mr. HIGGINS: Yes, I admit so far Mr. Bell is right, that if a person asked for milk of sulphur and he got pure sulphur that would be right, because both processes appear in the Pharmacopœia.

The CHAIRMAN: If he asked for milk of sulphur the inquiry would be satisfied, and the right thing would be done, by giving either one or the other? If he asked for precipitated sulphur, then you can only supply it by giving the pure sulphur alone?

Mr. HIGGINS: That is so, sir, and the first and only definition in the Pharmacopœia respecting milk of sulphur is that which refers to it as containing lime, and it does not appear in the last Pharmacopœia even as a synonym. Mr. Bell, in his evidence says, "If milk of sulphur is different from precipitated sulphur, I should expect to find it in the British Pharmacopœia," but he said that the Pharmacopœia did not contain all medicines. It does not contain all popular medicines, and will he say that milk of sulphur is not a medicine because he does not find it in the present Pharmacopœia? Not only is milk of sulphur left out of the Pharmacopœia, but many other medicines, such as paregoric, sal volatile, Seidlitz powders, and a number of other things; but surely it is not out that account that they are not to be sold as drugs. I shall call the highest medical testimony to prove that the milk of sulphur containing lime is less disagreeable than the other to take, that it is better in its effects, that the drug—precipitated sulphur—produces an irritative diarrhœa, and the other does not, and that a disagreeable sulphuretted hydrogen is caused in the stomach by one and not by the other. Now, under the Act, the substance must be sold to the prejudice of the purchaser. I am going to prove beyond all doubt that in this particular case it is not sold to the prejudice of the purchaser, but to his great advantage.

The CHAIRMAN: Suppose a surgeon wanted to dispense his own medicine, and went to the druggist and asked for six ounces of milk of sulphur, he being under the notion that he was getting pure sulphur. It would satisfy his demand according to you; but when he gets it home he finds half of it is not pure sulphur, but a mixture with other substances. Is not that to his prejudice?

Mr. HIGGINS: I will tell you; the answer is perfectly satisfactory. A medical man would never dream of asking for milk of sulphur when he wanted pure sulphur. There is a distinction between the medical and the non-medical public, and there is no doubt that the general public know nothing about precipitated sulphur; they never dream of asking for it. When medical men write their prescriptions, and want pure sulphur, they would put in sulph. præcipitatum, and there is really no adulteration here.

The CHAIRMAN: But this pure compound was neither sold in this case nor asked for. If you make out that a person asking for milk of sulphur is satisfied by the delivery of a mixture like this, well and good; there's an end of the case.

GEORGE MANSHALL, the appellant, was then examined, and deposed to having sold the two ounces of milk of sulphur to Mr. Steen, and to having told him that it was not precipitated sulphur, but that it was milk of sulphur containing sulphate of lime.

JOHN HENRY BALDOCK, practical chemist, of South Norwood, near London, examined by Mr. Higgins, deposed that he had been connected with the business altogether 24 years, and had been in the habit of selling a compound known as milk of sulphur, which invariably contained this sulphate of lime. Had never had complaints from the public about it. Had never sold precipitated sulphur, but had known frequent complaints made about it. It had been brought to him by persons who had

bought it elsewhere, with the statement that they could not take it because it would not mix with water or milk—the two fluids usually used to mix it; and in some cases that it produced diarrhœa. Kept precipitated sulphur in stock, and would use it for a prescription if such were ordered. If “milk of sulphur” were ordered, he would ask the prescriber which substance he meant, but if he could not get to the medical man, would employ the lime compound.

Cross-examined by Mr. Marshall, witness said he was not a manufacturing chemist, nor was he acquainted with Manchester and district trade.

MATTHEW POUND, of 60 Leather Lane, Holborn, and formerly for five years manager for Messrs. Savory & Moore, Regent Street, told of a consulting surgeon who insisted on having the lime compound when he prescribed lac sulphuris. He sells about 1 cwt. of lac sulphuris per annum, and not more than about 14 lbs. of sulph. præcipitatum.

Mr. MARSHALL asked witness questions about scientific writers who regarded the terms as synonymous, but witness maintained that the Pharmacopœias were the only sufficient guide, and that though milk of sulphur was excluded from the present Pharmacopœia, it was a recognised medicine.

WILLIAM SQUIRE, partner in the firm of Heaton, Squire & Co., Coleman Street, London, examined by Mr. Higgins—

How long have you been connected with the trade?—About 50 years.

During that time have you always regarded lac sulphuris and sulph. præcipitatum as two different drugs?—During my apprenticeship, and for a considerable time afterwards, such a thing as precipitated sulphur was scarcely known in the trade, and it is only within the last few years we have had any demand for it—that is, any material demand.

Do you not regard them as distinct drugs?—Perfectly distinct.

Do you supply the old preparation in large quantities?—Yes, much larger than the other.

Have you had any complaints about it?—No.

Cross-examined by Mr. Marshall: That was in your apprenticeship; but people have come now-a-days to require pure drugs?—I do not know much about that; we must only supply them with what they require.

Is it not a fact that you are giving up supplying this lime compound?—No.

But look at this notice, it is from your firm: “In consequence of the uncertainty of the law respecting the sale of milk of sulphur, we give notice that in future we shall send out pure precipitated sulphur, unless milk of sulphur be distinctly ordered. February 5, 1877.”

Mr. HIGGINS: That is after this prosecution.

WITNESS: We gave that notice because, when our customers ordered lac sulphuris we should invariably send the old sort; but after these prosecutions we made a point of writing to our friends to ask which they meant; and in order to save ourselves a good deal of trouble we gave that notice.

Mr. MATTHEW BELL, manager at Messrs. Raimes & Co.'s, of Liverpool, was examined, and said he had been in the business for 35 years. He regarded milk of sulphur and precipitated sulphur as two quite distinct drugs.

Cross-examined by Mr. Marshall: Do you say that milk of sulphur is not precipitated with muriatic acid?—We do not consider it so.

Do you recognise Dr. Brand as an authority?—I do not recognise anything except the Pharmacopœia as an authority.

Which Pharmacopœia?—The present one.

Where do you find a direction in the present Pharmacopœia to make up a compound with lime?—It is not in the present Pharmacopœia at all.

Then I ask you, do you agree with Dr. Brand that the form of sulphur, sometimes called milk of sulphur and lac sulphuris, may have been precipitated with muriatic acid?—It is precipitated sulphur, but it is not milk of sulphur.

Then you do not agree with that?—I do not.

Mr. HIGGINS (looking at the book quoted from): Why this is a “Dictionary of Science, Literature and Art.” (Laughter.) It is edited by Brand and Cox. Would you refer to this book if you wanted to know anything about pharmacy?—Most certainly not.

You would go to the Pharmacopœia?—Yes.

CHARLES UMNEY, of the firm of Wright, Layman & Umney, wholesale druggists, of London, had been practically engaged in manufacturing for fourteen years, and had always during that

time treated milk of sulphur and precipitated sulphur as two distinct drugs.

His evidence as to the trade custom coincided with that of the other witnesses.

Cross-examined by Mr. Marshall: You will surely recognise the authority of Dr. Brand as being a high one in chemistry?—He was certainly an authority, but I should not look on him as an authority on modern chemistry, and certainly not as an authority on pharmacy.

But it is not so long ago as your old Pharmacopœia?—Not quite. I know your books perfectly well.

You have told us that milk of sulphur should not be precipitated with hydrochloric acid, but only precipitated sulphur?—The terms milk of sulphur and precipitated sulphur are distinct. If I wished to prepare milk of sulphur, I should take a solution of lime, sulphur, and water, boiled together, and to that I should use sulphuric acid in sufficient water just to neutralise it; that precipitate would consist of hydrated sulphate of lime, not plaster of Paris, and sulphur.

And you hear from this (reading from book), Milner uses hydrochloric acid?—I do not look on Milner as an authority on pharmacy, but on chemistry pure and simple. It is a different matter applied to the arts. Milner starts with a wrong assumption. Milk of sulphur and precipitated sulphur are not identical bodies. He is a German, and is not acquainted with British pharmacy, and is therefore not an authority on British pharmacy.

But it is published by the English society for the use of English chemists?—Chemistry is the same in all countries. Pharmacy is not the same.

When you find Milner and Brand differ from you on this point, do you still adhere to your own opinion?—I say milk of sulphur is to be precipitated with sulphuric acid, and not by hydrochloric acid.

Where lac sulphuris is prescribed by a doctor, you would use that containing lime?—I am not a dispensing chemist, but if I had a prescription presented to me containing lac sulphuris, I would speak to the medical man to ask if he intended the lac sulphuris of the old Pharmacopœia of 1721, or the precipitated sulphur of the British Pharmacopœia, and if I did not see him I should not have the least hesitation in putting in the lime compound, as lac sulphuris has been called.

Might it not mean precipitated sulphur?—No; for I should consider lac sulphuris as that in the edition of 1721.

Re-examined by Mr. Higgins: Milner's “Chemistry” is a standard book for pure chemistry?—Yes, I know these books well. I question whether the authors even thought on the question of pharmacy.

In the trade, is it not a fact that the term milk of sulphur has become a defined term to apply to that containing lime, and the term precipitated sulphur used only to imply that compound which does not contain lime?—I have always understood it so.

Mr. MARSHALL again read extracts from the various books, which the witness did not agree with, and elicited from him the remark that some of them were old-fashioned, and none authorities on pharmacy.

Mr. MARSHALL: But we cannot have all these books pooh-poohed.

Mr. OLIVER PEMBERTON was next called, and examined by Mr. Higgins:—

What are you, Mr. Pemberton?—A consulting surgeon, and Professor of Surgery at the Queen's College, Birmingham, and one of the surgeons to the General Hospital there.

You have heard of these two drugs, precipitated sulphur and milk of sulphur. Do you regard them as the same or as distinct?—As two distinct drugs.

Do they have the same effects when administered?—Different effects.

Will you tell us in what respect they differ in their remedial properties?—Both drugs have a laxative action, but the one containing sulphate of lime, which is known under the English name of milk of sulphur, has an action which is far more temperate than that which is named precipitated sulphur. In the one case we avoid anything like diarrhœa, because the remedy produces a soft motion without straining, and is therefore applicable to certain classes of diseases of the rectum, and neck of the bladder. The other would produce irritating diarrhœa.

Have you had occasion when dealing with the disease of the rectum to prescribe one or other of these medicines?—I have constantly made use of this milk of sulphur during the thirty

years I have practised. The knowledge of its use was handed down to me by my teachers, and I carry it on in my own practice.

Is this a prescription which you drew up for a particular disease of that kind?—I never prescribed sulph. præcipitatum but once in my recollection, and that was about a year since for a patient who would have to have the prescription made up in France, and I therefore, thinking that the French chemists would not be aware of the popular English remedy, wrote sulph. præcipitatum B.P., meaning the precipitated sulphur of the British Pharmacopœia. The prescription you hand up to me is one dated November 20 of last year, which I wrote for a gentleman who consulted me before I had any idea of these trials:—"Mr. W.— Take of milk of sulphur, cream of tartar, of each 1 oz., make a powder: a teaspoonful to be taken every other morning in a little milk." By milk of sulphur I mean the preparation with the sulphate of lime.

Suppose they had put in precipitated sulphur, would that have answered your purpose?—No; I should then have cause of complaint against the chemist.

Suppose that the result of this case is to forbid the sale of what you understand to be milk of sulphur, do you think that would be to the advantage or the prejudice of the public?

MR. MARSHALL: I object to this; he is called as a scientific witness.

THE CHAIRMAN: Mr. Higgins, that is an inference we must draw whether it is to the prejudice or advantage of the public; we must infer that.

MR. HIGGINS: Suppose the result of this case should be that the sale of this preparation containing lime is forbidden, would the public thereby lose a valuable medicine? I am asking that from a medical witness.

THE CHAIRMAN: That would not be the result at all. He has only got to put a label on, "This is not precipitated sulphur, but milk of sulphur containing lime."

MR. HIGGINS: With great deference, sir, that would not be the result of the case.

THE CHAIRMAN: A man would be then protected.

MR. HIGGINS: Not under the section. A person going in and asking for milk of sulphur would be entitled to pure sulphur and nothing else. The label would make no difference. It says, "No person shall sell any person an article or drug which is not of the nature or substance or quality demanded."

THE CHAIRMAN: If you say milk of sulphur was demanded, and milk of sulphur is this compound containing lime, then there is an end of the case.

MR. HIGGINS: Suppose, on the other hand, you hold milk of sulphur does not mean this body with the lime, but only that which contains no lime, the fact of it being labelled would not affect it in the least, because a person going in and asking for milk of sulphur would not make any difference.

MR. MARSHALL: Yes it would, as with coffee—"This is sold as a mixture of chicory and coffee."

THE CHAIRMAN: Read the 8th section, and see if that does not protect him.

MR. HIGGINS: These conditions are negatived entirely, because part of their case is that it is injurious to health, and is mixed with something to increase its bulk and weight, and to conceal its inferior quality. It is only when these things are done away with that a label would be of any use.

THE CHAIRMAN: There is no evidence of this. It is impossible to come to the conclusion that it has been introduced fraudulently, for the purpose of increasing the bulk, or conceal the inferior quality of the article.

MR. HIGGINS: If that is your decision, I am content; there is an end of the case.

THE CHAIRMAN: No, that is only an expression of my opinion at this stage of the case.

MR. HIGGINS: I want to know what I have to deal with, because the case is at an end under the first sub-section.

THE CHAIRMAN: That it is sold to the prejudice of the purchaser, and that it was not asked for.

MR. HIGGINS: Then we had better go on.

WITNESS: With your permission, sir, I may say that if you take out the sulphate of lime from the preparation of milk of sulphur you would take out, in my judgment, its remedial value. I should have to seek another preparation to answer the medical purposes I have hitherto found in milk of sulphur.

Is it not a fact that pure precipitated sulphur produces disagreeable gases in the stomach?—Yes, and milk of sulphur does not. I have known milk of sulphur taken by the highest

and the lowest in the land for years and years with continuous benefit.

This pure sulphur produces irritative diarrhœa?—It is calculated to do so.

One mixes with water and the other does not?—One is taken more readily than the other.

And is less disagreeable?—Neither is nice. (Laughter.)

Cross-examined by Mr. Marshall: Is it not a mere opinion of yours? Can you refer to any standard works of authority, or do you assume that?—We go by Pharmacopœias, on the "Long live the King" principle.

There is nothing in the Pharmacopœia at all about it, except in the old one of 1721?—There are scores of remedies and drugs not in the Pharmacopœia.

But there is a number of works mentioned which give the two terms as synonymous. What is there to show that such an assertion is not true?—They do not go into the pharmaceutical or remedial value of the drugs at all.

Suppose milk of sulphur is precisely synonymous with precipitated sulphur, what difficulty would there be for a medical man to say in prescribing, "1st ingredient, precipitated sulphur; 2nd ingredient, sulphate of lime"?—They are not synonymous, and I cannot regard them as synonymous for one second in any case.

THE CHAIRMAN: Suppose you put in so much sulphur and so much lime, would not that have the same effect?—No, that would not do; it is a matter of chemical decomposition.

Would there be any difficulty supposing we call milk of sulphur pure sulphur, as we say it is—would there be any difficulty in saying "milk of sulphur containing lime"?—My milk of sulphur does contain lime.

But ours does not.—Then the sooner it does the better. (Laughter.)

I do not suppose there would be any difficulty in a label of that sort (one produced)?—None.

If it be a fact, as the county analyst has told us, that forty-five out of fifty samples he obtained were pure sulphur, that did not contain any sulphate of lime, you would expect that there had been very much irritating diarrhœa in these localities?—I think the use of sulph. præcipitatum is a very unwise thing. It is a very irritating remedy, and I think there would.

The fact of their being forty-five pure samples shows that the chemists have done a very erroneous and dangerous thing?—If a man is troubled with a certain complaint and takes that, he is in a very serious and miserable condition.

Then a good many of the chemists of Manchester must be making a considerable mistake?—I must not pass an opinion of that kind. My opinion comes to this—they had much better use lac sulphuris.

Re-examined: You will not be surprised to hear that forty-five out of the fifty samples were obtained since this prosecution?

MR. MARSHALL: Nothing of the kind? Some of the samples were obtained before the prosecution commenced.

THE CHAIRMAN: I remember that the witness said distinctly he obtained them after this prosecution.

MR. HIGGINS: Certainly.

Suppose you had sulphate of lime and plaster of Paris made up together, would that act in any way like milk of sulphur?—No.

And the virtue of this lac sulphuris is that the sulphur and the sulphate of lime are precipitated together?—Yes. The real action is this, that the preparation mixes with the fecal contents of the intestines, so that a soft motion is produced; the other acts on the intestines and produces a strain on the lower bowels.

THE CHAIRMAN: Why was this lac sulphuris dropped from the Pharmacopœia?—I cannot understand it.

THE CHAIRMAN: I know Dr. Pemberton to be a very great medical authority, and I would like him to explain that, if he can.—I cannot. No doubt there is a fashion as to the use of certain remedies, but I am unable to say why this is so.

The Court then adjourned for luncheon, and on their re-assembling, Mr. Higgins called Professor Redwood.

THE CHAIRMAN: Mr. Higgins, we have been considering this matter since we left the Court, and I am speaking now for all the magistrates who have heard the case. We think, although the absence of this substance (milk of sulphur) from the Pharmacopœia would justify the county analyst in taking these proceedings, we cannot for one moment doubt, after the evidence of Mr. Pemberton and others, that in the trade and in the profession there are two distinct things known by the names respectively of milk of sulphur and precipitated sulphur, and

that they are supplied to the trade and to the public by those names as two distinct things. We cannot doubt that after the evidence of Mr. Pemberton, who has been prescribing this thing under the very name it was asked for on this occasion. This being a penal action, we cannot say otherwise than that it has not been made out, and that the appellant has committed no offence within the meaning of this Act.

Mr. HIGGINS: Then I ask that the conviction be quashed, with costs.

The CHAIRMAN: The conviction will be quashed, but with reference to costs we are not disposed to add them to the order, as we think there was sufficient justification for the proceedings instituted, through the substance being omitted from the Pharmacopœia, and we do not expect the county analyst to be a medical man of the experience of Dr. Pemberton.

Mr. HIGGINS: Then yesterday's costs.

The CHAIRMAN: I do not feel at all disposed to make any order anywhere.

Mr. HIGGINS: We had all our witnesses here, including Dr. Redwood, of London; Mr. Siebold, of Manchester; Mr. Woolley, of Manchester; Mr. Ince, many years manager for Messrs. Godfrey & Cooke, of London; and Mr. Alfred Bird, of Birmingham, none of which gentlemen have been called to give evidence.

The CHAIRMAN: You would have to have had been here, as your case might have been called on first. We make no order.

LACTOPEPTINE v. LACTOPEPSINE.

A CASE of very considerable interest to the pharmaceutical profession came before Vice-Chancellor Bacon in the Chancery Division of the High Court of Justice on March 22. Messrs. Carnrick, Kidder & Co., of Great Russell Street, London, were the plaintiffs, and they applied for an injunction against Messrs. Morson & Son, of Southampton Row, and against Messrs. Mackey, Sellers & Co., of Bouverie Street, the defendants having, as they alleged, infringed their trade mark in a certain digestive medicine, the name of which—"lactopeptine"—they (the plaintiffs) had coined. Defendants had both manufactured and sold a similar product, to which they gave the name of "lactopepsine."

Mr. Kay, Q.C., and Mr. Romer appeared for the plaintiffs; Mr. Everitt for Messrs. Morson & Son, and Mr. Rogers for Messrs. Mackey, Sellers & Co.

The evidence for the plaintiffs was to the effect that they had largely sold this preparation in the United States, and that in 1875 they had introduced it into this country, where they had established themselves, with Mr. John Morgan Richards as a partner. The sale was represented to amount to 3,000*l.* a month. Messrs. Morson & Son had purchased lactopeptine from plaintiffs, but had subsequently prepared a similar article themselves, under the title of lactopepsine, which title the plaintiffs regarded as a colourable imitation of their own. Messrs. Mackey, Sellers & Co. had in 1875 received an order for lactopepsine (or lactopeptine) from Dr. Highton, of the Derby Infirmary, and, not knowing the preparation, had written to Dr. Highton about it. His answer was not put in evidence, but it was shown that Messrs. Mackey, Sellers & Co. had bought some of the plaintiffs' product, and had also manufactured themselves a compound to which they had given the name of lactopepsine. The main line of the defence was that there had been no attempt to pass off lactopepsine as the compound prepared by the plaintiffs, and, further, that lactopepsine was a scientific term indicating a compound of lactic acid and pepsine. Affidavits were read from Mr. John Williams, president of the Pharmaceutical Society, from Professor Redwood, and others. Mr. John Williams stated that the prefix lacto was frequently adopted in medicine, and indicated the combination of lactic acid with other ingredients, and he said that to prevent the use of such combinations of words would be a great hindrance to the commercial use of the ingredients. Professor Redwood's testimony was to the same effect. Affidavits on the other side were read from Mr. Sanger, Mr. John Thompson, and many other wholesale dealers and medical men, saying that they knew the plaintiffs' product by the term lactopeptine, and that by that term they should understand no other preparation.

The VICE-CHANCELLOR, in his judgment, said: I cannot doubt that this is as palpable an infringement of a plain trade mark as ever came before any Court. The history of the case is that the plaintiffs, having invented a compound—Mr. Rogers calls it a "drug," I say a compound—give to it a purely fanciful name,

and it does not make it the less a fanciful name because "lacto" is in it and "pepsine" is in it, because "lactopepsine" does not describe any drug. There is no such thing to be found in the Pharmacopœia. It is proved that the name was not known until it was used and applied by the plaintiffs. It is proved by Mr. Sellers, among other people, most conclusively that when he read "lactopepsine" in Dr. Highton's order to him he was aghast; he did not know what it meant. He said, "I must write to him about it;" but then, having as I suppose written to Dr. Highton, having got an explanation from Dr. Highton as to what he meant when he ordered four ounces of "lactopepsine," Mr. Sellers writes an order to the plaintiffs, having found out that they were the people who sold "lactopeptine," and sends for it by the proper name. That it was perfectly well-known to the persons whom it concerned to know such things I do not entertain the slightest doubt, notwithstanding the triumphant reference which is made to Mr. Williams' affidavit, and the other gentlemen's affidavits who are gentlemen of reputation; but there is the affidavit of Dr. Bartlett, who is a chemist of experience, and this affidavit remains untouched and unanswered. Having mentioned the words to which "lacto" is sometimes prefixed for the sake of explanation, he says in the fifth paragraph of his affidavit, "None of the above words, except the word 'lactophosphate,' are scientific or have any real scientific meaning, but they are all hybrid words. The term lactopepsine or lactopeptine is not a scientific combination, inasmuch as it cannot denote the combination of lactic acid and some other acid with one or more bases. It is not such a word as would naturally and scientifically be used by chemists acquainted with the subject to denote a combination of lactic acid and pepsine, much less to denote a combination in which lactic acid and pepsine constitute only a very small proportion of the ingredients, as is the case both with the preparation sold by the plaintiffs as 'lactopeptine' and with the preparation sold by the defendants as 'lactopepsine.' In both these cases lactic acid and pepsine form less than a fifth part of the ingredients of the respective preparations. In short, the word 'lactopepsine' or 'lactopeptine' would be meaningless to any chemist or other person not acquainted with the plaintiff's preparation, though anyone who knows that 'lac' is the Latin word for milk would, probably surmise that the preparation to which such a name is applied has some connection with milk and pepsine." That statement remains wholly uncontradicted, and when you look at the formula which is printed upon the bottle containing what is called "lactopeptine," you find a variety of ingredients, sugar of milk, pancreatine, and other things which I need not mention, and so far from being a drug well known, it is nothing like a drug; it is a composition to which the man who compounds it chooses to give the appellation and distinctive trade mark and character of "lactopepsine" or "lactopeptine." It is quite indifferent which. That is the plaintiff's case, and that the plaintiffs prove. It is proved beyond doubt that a very extensive sale was established in England for this article of commerce with this distinctive appellation—a profitable trade. Whether profitable or not is indifferent, but that is proved. It is proved that the defendant, Mr. Morson, dealt with the plaintiffs for that article by that name—bought things of them to the amount of 8*l.* or more. Whether it is more or less does not signify—he knew it perfectly well—until the sublime notion occurs to him that he who manufactures pepsine, finding there is a valuable trade established in "lactopepsine" or "lactopeptine," can himself make a composition, whether with or without the formula on the outside of the bottle, of his own ingredients. He can make a composition and sell it; all that he is at perfect liberty to do. He may make any composition he likes, he may sell it when he likes or to any person he likes; but the question I have to consider is whether he, who has been dealing with the plaintiffs for this commodity known by a particular name, can stamp upon his, the defendant's, bottles that name which the plaintiffs have used for some time before the registration, and for which by the registration they have got that sort of legal title which the Act of Parliament describes. Therefore, it seems to me, there is no case which can touch this matter against the plaintiffs' claim. After comparing this with other cases which had been referred to in the arguments, His Lordship continued:—Then Mr. Rogers says that the plaintiffs' case is defective, for they have not proved that somebody was deceived. I think they have proved that quite as much as is necessary, not that it is necessary to prove any such case. If what is done is calculated to mislead, then upon the authorities

an injunction ought to be granted. It is sometimes forgotten, but it ought always to be borne in mind, that the judgment went on what was done that was calculated to mislead, not that a man was deceived, but that what was done was calculated to deceive, for the purpose of making people believe they were paying their money for one commodity when in point of fact they had another. I think that the case is very clearly made out against both the defendants. I think that the use of the word "pepsine" for "peptine" is merely a colourable imitation of the trade mark which the plaintiffs have adopted as their trade mark, and I think their registered trade mark has been plainly, wilfully, and intentionally interfered with, and every attempt which has been made—and I adopt the words Mr. Romer used as to the whole farrago of affidavits made on the part of the defendants—shows that the defendants knew well they were infringing the plaintiffs' right, and determined to run the risk of trying to succeed in that attempt. I think the injunction must go as asked, to restrain the sale by the defendants, under the two names, or either of them.

Mr. EVERITT: I have had an opportunity of considering what has been said, and as we do not intend to carry the case any further, I propose to offer my learned friend at once a perpetual injunction and the taxed costs. Does he accept that offer so far as my client is concerned?

Mr. KAY: I do.

Mr. ROOERS: Perhaps my learned friend will let the case stand over for me to see whether my clients will do the same. They are not here at this moment.

Mr. EVERITT: We will treat this as the hearing of the cause.

Mr. KAY: Yes.

The VICE-CHANCELLOR: I do not want to hear any more of it.

Mr. KAY: With costs to be taxed, if the parties differ.

Mr. ROOERS: We will do the same.

Mr. KAY: Very well.



FRESENIUS'S "QUALITATIVE ANALYSIS."

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—On p. 116 of your paper it is stated that the above work "has degenerated in recent English editions into a mere outline of qualitative analysis."

As this statement is incorrect, will you allow us to inform your readers that the 8th English edition (1872), and the 9th English edition (1876) are verbatim translations of the most recent editions of the original work? To the 7th edition (1869), which has not been in print for five years, your remark may perhaps be applicable.

We are, sir, yours obediently,

11 New Burlington Street, W.: J. & A. CHURCHILL.
March 16, 1877.

[I am glad that Messrs. Churchill have drawn attention to the inaccuracy of my misleading remark. It is quite inapplicable to the latest English editions, referring only to the edition of 1869, which I am glad to learn has been some time out of print.—THE REVIEWER.]

THE RIGHT OF COUNTER PRESCRIBING.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—It is possible the legal interpretation of the Act of 1815 may be against "Counter Prescribing," as practised by chemists, universally, for the last 60 years.

In this case a short bill should be brought into the House, securing to the public the undoubted right they now enjoy of applying to the chemist for advice and medicine in simple ailments.

As one who has stood behind a prescribing counter for more than 40 years I offer my services, without fee or reward (requiring only hotel and railway expenses), to canvass the whole trade, from Land's End to John o' Groat's house, in order to raise the sinews of war for fighting out this question to a satisfactory issue.

A bill, in well-defined language, might be drawn up, which, whilst securing to the public and to chemists their just rights, would be acceptable to the honourable portion of the medical profession. This portion constitutes an overwhelming majority.

76 Briggate, Leeds:

March 27, 1877.

Yours faithfully,

J. C. REINHARDT.

[As we understand, Mr. Reinhardt, whose name is well-known in pharmacy, but who has himself retired from business, has made this offer to the Executive Committee of the Trade Association.—ED. C. & D.]

IRISH PHARMACY.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—Will you allow me to call the attention of your readers to some matters in connection with pharmacy here which are not as they should be.

It is a glaring fact that the Pharmacy Act is being constantly violated: it comes under my knowledge that there are in the North of Ireland many druggists in country towns, who have not any qualification whatever, who are in the habit of dispensing all the prescriptions they can get, and this goes on systematically from time to time without the slightest interference from anyone. This is not as it ought to be. How is it to be remedied?

The Council of the Pharmaceutical Society of Ireland have decided that they are are not to be a prosecuting body: it is extremely difficult to get a case against a person offending, as he is very careful not to supply a stranger or anyone who is not known to him.

It seems strange to me that in these times of prosecutions we never hear of anyone being prosecuted for supplying pharmaceutical preparations not of required strength or prepared otherwise than in accordance with the B.P.

This is a species of fraud which is practised by a great number of houses, some of them, no doubt, small and obscure; some, however, of considerable respectability and position are not above practising sophistication in every preparation where it is possible.

I think this is a matter which might with advantage be taken up.

Belfast: April 5, 1877.

Yours respectfully,
P. C.

EVEN WITH THE APOTHECARIES.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—It is a matter of congratulation to have won the victory in the vexed "milk of sulphur question," and I hope in the "Nottingham prescribing case" the chemist's counsel may be equally as fortunate. The apothecaries are uncompromising in their persecutions of us, but it bodes ill for their future success if they cannot afford to wait the issue of the pending trial. If we lose our case, we shall have to consider how to harass our antagonists so that their victory may be dearly bought. It is admitted that the public may prescribe for themselves, yet the chemist is not allowed to do so. This, I consider, is an infringement on our liberty, and if carried out England is no longer a free country. May we write out a prescription, give it to our customer, and then at his request dispense it? The argument is, that the chemist charges for his prescribing as well as for dispensing. This is a fallacy, as in nine cases out of ten the chemist charges less for a bottle of his own prescribing than he does for that of a regularly qualified man. Stamping the medicines does not seem to me to reach the root of the evil, as the chemist still commits the sin. If all ways of escape are closed to us, I would suggest that a small book be got up diagnosing the complaint, and giving two or three formulas for each. Such a work might be produced at a

small cost, the cover, &c., being used for advertisements, thus really affording a profit to the chemist and saving the cost to the public of an apothecary.

I am, sir, yours, &c.,

J. R. C.

[A similar suggestion was made in our correspondence columns of May last. It is an excellent plan, and may well be carried out, whether the apothecaries win or lose their case. —Ed. C. & D.]

COPPERED BUTTER.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—I send you the following, although I cannot claim for it any connection with the trade, as being a new source of danger. Some time ago I chanced to be in a house where the "gude wife" was at the churn, complaining bitterly that the butter "widna cum," when a second wife appeared upon the scene, and advised her to try the effect of a few coppers. Accordingly, about a penny to the pound of butter was put into the churn, when "cum" it did. I have since been informed that it is not an uncommon practice. The following queries suggest themselves:—1st. In what way would copper or its acetate facilitate the coagulation of butter? 2nd. Would not the quantity of verdigris that might rub from off a six or eight year old penny be very detrimental to health, even when mixed in a pound of butter? 3rd. Would not this come under the Food Adulteration Act?

Monymusk:
April 7, 1877.

Sincerely yours,
BELLADONNA.

MEDICINE MEASURES.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In your last issue you were pleased to make a favourable comment upon my effort to ward off the threatening difficulty and confusion into which we are drifting in regard to the measures by which patients are to regulate their doses of medicine.

Since that time I have had many favourable remarks, not uncommonly accompanied by some criticism or suggestion of such nature as showed that the critic had failed to see the whole bearing of the question. This is not at all to be surprised at. I have naturally paid more attention to the matter than those who have not taken in hand to seek a remedy, and they now naturally suggest all the considerations which presented themselves to me as I studied the subject—which presented themselves, were considered and disposed of, before I finally settled upon the plan which I have now adopted, and am working without any difficulty whatever.

If there are difficulties attending the change I have not yet discovered them, and have no doubt they will be overcome as they are discovered.

I sent a short note on medicine measures to the last Pharmaceutical meeting at Bloomsbury Square, and as I was not there to reply to the comments made upon it, I venture to offer to your correspondence columns a few words as an addition to a letter which I have already rather hurriedly written to the *Pharmaceutical Journal*.

The comments at the meeting were necessarily made under a very short and perhaps imperfect acquaintance with the contents of my note—remarks which may be taken as criticisms upon the note, applying rather to suggestions which the note might have, but did not contain, and difficulties are spoken of which, if they apply to the suggested change at all, do so in an incomparably smaller degree than they apply to the present want of system.

It is suggested by Mr. Greenish that the necessary change should begin with medical men. The fact is that the change began with silversmiths or with public taste long ago, and medical men and their patients are now drifting into the consequences. Our grandfathers used teaspoons which held about 5i., tablespoons which held about 3ss., and wineglasses which held about 3iss.; but public taste was in favour of larger sizes,

and the double of these capacities is now more nearly the measure of their contents. But the habit of using the old mode of expressing doses is not readily changed, and the less readily from the want of some cheap, simple, and handy substitute which would be free from the error or irregularity which pertains to spoonfuls, &c.

Messrs. Martindale and Plowman have recommended, as the result of their experience at hospitals, that a teaspoonful should be regarded as 3iss., and a tablespoonful as 3i. Thus we should have hospital tablespoonfuls and hospital teaspoonfuls, besides the many others which have been suggested, such as measured spoonfuls, accurate spoonfuls, old spoonfuls, small spoonfuls, graduated spoonfuls, spoonfuls by measure, &c.

Mr. Long objects to the new form of measure which I have adopted on the grounds that absolute accuracy would no more be obtained in the measures than in spoons, that thick medicines would be wasted by sticking to the measure, and that most patients would spill the medicine down the side of the measure.

No one will deny that a spoon might be made accurately of any size if required, but, as before stated, the taste of the public demands a tablespoon which holds more than half an ounce, and we cannot suppose public taste or fancy will demand a half-ounce measure of the capacity of six drachms. When it does so this will be a new difficulty; but in the meantime we may be satisfied with overcoming difficulties which are supposed actually to exist. The mode by which the measures are made insures a very close approximation to accuracy, the clay being turned under a template which determines the exact size of the inside of the measure in its first stage, the only difficulty being to allow for the shrinkage in burning, the thickness of the glaze, &c., points which the practical experience of the manufacturer appears to me to have quite satisfactorily overcome, and which I have no doubt will be equally well attended to though I have ceased to have a pecuniary interest in their production. These sources of variation at the worst would involve errors too small to be of any practical importance—certainly much less than the errors likely to result from Mr. Long's custom of giving a ½-oz. or 1-oz. bottle to poor people to be used as a measure. Though Mr. Long says cheapness ought not to enter into consideration at all in our business, this consideration (if the journal report be correct) induces him to give phials to be used as measures by the poor. As to the thick medicines sticking to the measures, would they not stick to the phials? As to the nine customers out of ten who would spill the medicine in using a measure, would they not be more likely to spill it in using a spoon?

On the other hand, while Mr. Long objected to the economy Mr. Bland objected to the expense, but this objection was based upon the incorrect assumption that the measures must necessarily be given away. It may be said I give them away in dispensing in the same sense as I give away the bottle which contains the medicine. I make my charge cover all necessary expenses. But if a customer came for Mr. Bland's twopennyworth of nitre I would not give a measure; no more would I give a bottle. Mr. Bland, while objecting to give away a measure costing him a penny and a small fraction, will go to the trouble, when dispensing powerful medicines, of carefully graduating the bottle with diamond marks, and then attaching a slip of paper with marks corresponding to the diamond marks to indicate the separate doses. To anyone who may be disposed to adopt Mr. Bland's method I should be inclined to say, as Mr. Skimpole said to the tradesman who asked if he should wait for a payment, "Don't if your time is any value to you." I knew this question of expense is one which will and ought to have considerable weight with every one: even Mr. Hills tempts his customers to use measures by offering them cheap. If to have measures at as low a price as possible is of importance in Oxford Street, with Bell & Co.'s splendid connection, how much more so is it in poor neighbourhoods and where competition is severe? The cost of the measures need not be a burden upon anyone. Some of the trade are selling them, and the customers, who, under any circumstances, have to pay for them in some form or other, will usually save more than their price in each bottle of medicine in consequence of its lasting out its legitimate time; besides which, it is not necessary to have a new measure each time the mixture is repeated. It has also been objected that the measures would accumulate in a physic-taking family, and become a source of confusion. If so the family have only to treat them as they treat empty medicine bottles when they have a basketful—send them back, and get for them what they are worth.

Sundry of my critics have urged that the pharmacists will have to use the term spoonful so long as the medical men do—a point which I have not endeavoured to dispute; but none of them has offered a logical solution of the question "How are we to direct medicine when the doctor writes '3ss. bis die,' or 'Si. ter die?'" Such expressions are becoming very general in our neighbourhood, especially with the rising practitioners, and I find them not uncommon in prescriptions we see from a distance.

If we are bound to say on the labels "a tablospoon" when the doctor writes "coch. mag.," we should by the same logic be bound to use the words "half an ounce" when he writes "3ss." But such questions are trifling. We ought certainly to ensure, as best we can, that the patient gets the dose the doctor intends. To this end am I working.

11 Grey Street, Newcastle.

BARNARD S. PROCTOR.

THE PHARMACEUTICAL COUNCIL.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—I was pleased to see the remarks of Mr. Barnaby, of Rochester, in your journal of March 15, as they entirely coincide with my ideas and those of many other members of the trade, as to the advisability of candidates for seats on the Pharmaceutical Council publicly stating their opinions, as at present we have no means of knowing their views, but we do know that at the present time there are very few members of the council who understand the difficulties of the country trade and the legislation required at the present time, and more especially since the passing of the Pharmacy and Poisons Acts.

The excessively scientific examination for even the "Minor" makes it most difficult for the country trade to get apprentices, and very many of the examined assistants are, after this scientific examination, disgusted with what they call the drudgery of the country trade, as they say they "go in for dispensing." High scientific acquirements are very desirable for those who have time and money to obtain them, and let them by all means get as much of this knowledge as they can, but it will not do for the country trade until society has attained a much higher standard of education than is the case at present; hence the desirability of having members on the council who really understand and can meet the present difficulties of the country trade.

Then, in the passing the Pharmacy Act nothing could more clearly show that the council did not then understand the country trade any more than they do now, and to show this more clearly I will take an extent of country, say from Chesterfield to Buxton and Chesterfield to Glossop, covering an area of about 700 square miles. Well, how has the Pharmacy Act supplied the wants of all the hamlets and towns between the places named, viz., Chesterfield, Buxton, and Glossop? There are only six registered chemists, and of these only one qualified, in these 700 square miles.

I want to know where are the inhabitants of these scattered hamlets to go in case of, say, a sudden and serious attack of cholera or diarrhoea in either man or beast?

Medical men or veterinary surgeons cannot live except at very wide distances apart, and the public, according to the Act, cannot get a dose of laudanum, which might be instrumental in saving the life of man or beast: both might be dead before assistance could be procured.

I am quite sure the council never intended such a state or even contemplated such effects from the passing of the Act; but their ignorance of the country trade has led them into this dilemma.

If they prosecute in towns, which they might justly do, as there are plenty of qualified men to sell poisons, they must, to not consistently, carry the prosecution into the country districts. This is, in my opinion and also in that of many others with whom I have had conversations on the subject, the blot in the Pharmacy Act, and it cannot be remedied except by an amendment of the Act which shall empower the council to register one or two persons in every hamlet for the sale of poisons that may be required in any village, until they have supplied the public with facilities for getting useful remedies, even if they are poisons. Until this is done the Act will be a dead letter.

Everyone cannot keep a medicine chest in these country places, and even supposing they were to do so, the danger of poisoning would be increased to a very alarming extent.

No Act of Parliament can be carried out that does not meet the requirements of the public.

This district is only a specimen that could be multiplied all over the country.

I am, sir, yours respectfully,

Chesterfield: April 11, 1877.

A. GREAVES.

THE SOCIETY OF PUBLIC ANALYSTS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—There is a social aphorism current, "When things come to the worst they will mend." You will be happy to note that the milk trade have opened upon that bright prospect at the end of last year. They have put in a preventive service designed to discharge some of the protective and discriminative functions performed by the Apothecaries' Society and the Pharmaceutical Society to the members of their professions. The new formation—which is affiliated to the National Chamber of Trade—is termed "The Metropolitan Dairymen's Society," with a very full staff of executive officials. To quote from its prospectus, "The objects for which the society is established are:—(1) The advancement of the interests of the milk trade, especially by taking every possible means to prevent the adulteration of milk."

As tea and milk are so constantly allied, in more ways than one, this might appear charming, but for the serious consequences which may be involved. This milk business has hitherto formed the chief pabulum of that lively infant—the Society of Public Analysts. The milk has been good enough, at any rate, for this babe, which is a rare sucker, and has so thriven upon it that you have only to hear how the brat has been squalling during the last month or two.

The Analyst for April commences:—

NOTES OF THE MONTH.

The report of the Inland Revenue Laboratory, just issued, was the subject of some comments by our president at the last meeting. While not wishing to detract one iota from the merit of the gentlemen who seem to have been sedulously educating themselves for the novel duties thrust upon them, &c.

And concludes:—

Personally we much respect Mr. Bell and his coadjutors, and we trust they will take our remarks in all friendliness.

Now, sir, this is nothing but the puling of an ill-bred infant trying to cut its teeth.

It is a pceivish display of gums, considering that the Inland Revenue Laboratory was analysing the food and drink of the country to the uniform benefit and satisfaction of the United Kingdom before any one of these wretched whimperers was born.

The whole commercial body of the nation had such plenary confidence in Somerset House that it was at the special demand of traders that Clause 22 was inserted and maintained in the Act 38 and 39 Vic., chap. 63.

Every artifice which the craft of childhood was capable of was used by these new-born analysts to obstruct the passing of this clause in its present shape. They were conscious that it was a flogging shop for their misbehaviour. A child might laugh at their concluding remark: the sweep and soot bag run up against you with—"no offence meant."

39 Mincing Lane, E.C.: I remain, sir, yours truly,

April 11, 1877.

R. M. HOLBORN.

LIQUID FOR CHEMICAL BATHS.—It is often necessary to surround the pipes of heating or evaporation apparatus, and hot air apparatus, ovens, stoves, &c., with a liquid which will not boil at a temperature of 212° Fahr.; it is also often necessary to make use of baths which will not easily boil or freeze. The liquids usually employed for this purpose are water in which sea salt has been dissolved, oil baths, &c. Instead of these various agents, it is now proposed, says the *Iron Age*, to make a solution of chloride of lime in glycerine, a solution which does not boil below 572° or 626° Fahr., and has the further advantage of never attacking metals nor congealing.



LETTS, SON & Co. (LIMITED), whose name as publishers of diaries has for so long been associated with the Royal Exchange, have removed to 33 King William Street, London Bridge.

THE COMPANY OF CLOTHWORKERS has offered to expend 10,000*l.* in providing adequate means for carrying on the textile industries department in the Yorkshire College of Science. Certain conditions are attached to the offer, which the council will have to consider.

TO KEEP STEEL FROM RUSTING.—Dissolve one quarter of an ounce of camphor in one gill of cold-drawn linseed oil; by adding to or diminishing the quantity of oil, it may be made to any consistency desired; apply this with a soft rag.—*Journal of Materia Medica*, New York.

DR. AYER, the well-known American "patent medicine man," is said by the *New York Druggists' Advertiser* to be hopelessly insane. His income is reported to be \$2,000 a day. There has probably never been a time in the last ten or twelve years when he has had less than \$500,000 lying idle and awaiting investment.

CHLORAL PLASTER.—This may be prepared by sprinkling chloral over a common pitch plaster, one to two scruples of chloral for every four square inches of the plaster. Care should be taken not to incorporate the chloral with the pitch. The plaster is applied for twenty-four to forty-eight hours; when removed, the skin is found covered by a number of small vesicles; these are opened, and the part then covered with a cerate dressing. Dr. Solari, of Marseilles, recommends this plaster in cases of neuralgic pains resulting from exposure to cold.

EAU DE JAVELLE.—

	Ozs.
Bleaching powder	1
Carbonate of potassa	1
Water	33

Triturate the bleaching powder in the cold with 25 ozs. of water, then add the carbonate of potassa, previously dissolved in the rest of the water, shake well, and let it settle. The supernatant liquor is filtered if necessary, and mixed with 1 ounce of muriatic acid, when it is ready for use.—*Boston Journal of Chemistry*.

DOMESTIC CHEMISTRY.—An exhibition of cookery and food products was held at Berlin a few weeks since, and, judged by the accounts in German journals, appears to have been fairly successful. Amongst the specialties exhibited the following were noted as especially deserving:—Fruit from the Southern Tyrol, preserved by Dr. Nügel's process, in which scarcely any sugar is used, and the flavour and aroma of the fruit fully retained; eggs condensed by Berg, of Cracow, so that the substance of 1,500 eggs occupies no more room than 100 eggs in their shells. It is anticipated that eggs so prepared will become as recognised an article of consumption as extract of beef or condensed milk. Also Dr. Naumann's celery salt, which is daily becoming more appreciated for culinary use in private families in Germany.

A PROCESSION OF POISONINGS.—A curious fact in relation to strychnine poisoning is related in the *Journal d'Hygiene*. A farmer at Choisy-le-Comte (Seine-et-Marne) put down some strychnine bullets about his fields for the purpose of killing some troublesome foxes. The foxes were killed off rather rapidly by this means. A man went round each morning and picked up the strychnine bullets which the foxes had not appropriated. On one occasion he skinned one of the dead foxes on the spot, took away the skin, and throw the carcass into a ditch. Next day by the side of the dead fox he found half-a-dozen dead magpies, who had fed on the poisoned body, and two days later he found another dead fox close by the spot, the last victim having evidently been indulging in one of the poisoned magpies. All this while no new strychnine bullets had been laid about, and magpie feathers were found in the last fox's stomach.

GLYKALINE.—The writer of the "Social Week" in *Vanity Fair* of March 17 has broken into enthusiasm over the virtues of Leath & Ross's Glykaline. "The other morning," he says, "I woke with that most uncomfortable of feelings, a general oppression, which is the certain precursor of a catarrh. At first black despair seized me, but luckily I remembered that if taken in time the mystic contents of a little green glass bottle might save me from the prospect of many days' discomfort both to myself and others. I sped to the nearest chemist's, and found the longed-for remedy, and before night was cured: it is called 'Glykaline,' a colourless, tasteless fluid, three drops of which taken at intervals of an hour will infallibly do away with the most obstinate of colds. All this sounds rather like an advertisement, so I beg you to understand that I have no personal or pecuniary interest in the sale of Glykaline, and only sing its praises from a wish to spread its healing properties around, and, by recommending it, confer a boon on the suffering human race."

SIR ROWLAND HILL, K.C.B.—Steps are being taken to erect a permanent memorial—in Kidderminster, where he was born, on December 3, 1795—of Sir Rowland Hill, to whom the nation is indebted for the uniform penny postage system, and for that capital invention, the adhesive postage stamp. At a town's meeting convened by the Mayor (T. Radford, Esq.), a committee, consisting of most of the leading inhabitants, manufacturers, and others, was appointed. The chairman is the Rev. G. D. Boyle, M.A., Vicar of Kidderminster; vice-chairman, F. Burcher, Esq., deputy magistrates' clerk; treasurer, James Chambers, Esq., actuary, Savings Bank; and hon. secretaries, James Morton (Town Clerk), and A. W. Beale, Esq. It is thought that no one who has ever received a letter by post will refuse to give at least the value of a postage stamp towards the object in view. The committee have therefore issued an appeal for a national penny subscription; and collecting cards have been prepared, to enable postmasters and other friends in every locality to assist in the movement. The notices which have already appeared in the English papers have elicited communications from Vienna and Leipzig, where subscription lists have been spontaneously opened; and the sums received duly acknowledged in certain newspapers which have taken up the matter in those cities.

TO REMOVE GLASS STOPPERS FROM BOTTLES.—The *Druggists' Circular* says:—"When only water has been in the bottle, the best way is to apply heat to the neck of the bottle. To do this successfully, without breaking the bottle, the wick of a spirit lamp is trimmed so as to give a flame of about the size of the neck of the vial. The bottle is held in the flame with the two hands and turned as rapidly as possible, while its neck is immersed in the middle of the flame. From time to time the vial is taken out of the fire, and the stopper tried. If it holds fast, the bottle is heated again, without loss of time, until the stopper comes out: then bottle and stopper are allowed to cool separately. The whole operation takes generally from four to ten seconds. In skilful hands it is invariably successful in less time than it takes to explain the manipulation; but beginners, through injudicious heating, generally break the first bottles which they try to open. When the bottle contains other liquids than water it is necessary, before applying heat, to dissolve out any substance that may have dried between the stopper and the neck of the bottle. To effect this, the bottle is inverted in a small graduate containing the appropriate solvent, that is, water for eugary liquids or other soluble substances, alcohol for resinous bodies, &c. After six or eight hours, the stopper is frequently found loosened without the use of other means. By the way, the heat is applied as rapidly as possible, because it is important that the neck of the bottle should become warmed, and thereby dilated, before the stopper has had time to expand also. In some cases it is impossible to open the bottle at all without breaking it: this happens when it contains or has contained alkalies, their carbonates, &c., which completely solder the glass together. It is almost unnecessary to add that alcoholic and ethereal liquids require the exercise of the utmost caution to avoid accidents."

MANUFACTURE OF DYNAMITE.—M. Sabroto, the discoverer of nitro-glycerine, has communicated to the Académie des Sciences the results of some experiments, which he thinks may be useful to manufacturers of dynamite. While acknowledging the importance of M. Nobel's idea of giving to nitro-glycerine the consistency of a solid body by causing it to be absorbed by a silicious substance, so as to be more easily employed in mines, M. Sabroto has always been struck with the frequent occurrence of explosions in dynamite

factories. He has often thought that these accidents, the details of which are very imperfectly known, may be caused by the manipulations which take place, either in preparing the paste of nitro-glycerine and the absorbent substance, or in moulding and compressing the paste for giving it the form of cartridges. Compression and friction against hard substances are so many causes which easily bring about an explosion of nitro-glycerine. It seemed to M. Sabrero that these causes of danger might be avoided by modifying the manufacture of dynamite in the following manner:—The silicious substances, of the nature of *Kiesel-guhr*, &c., although only slightly plastic, are capable of being moulded after moistening with a little water, and take a consistency which is not inferior to that of dynamite cartridges. He made some cylindrical cakes with Santa Fiora fossil meal, which, after being dried at 100° Cent. (212° Fahr.), to get rid of the water, were plunged vertically into the nitro-glycerine, so as to become saturated therewith. The experiments to determine the quantity of nitro-glycerine which cakes were capable of absorbing were not made with the liquid itself, for fear of accident, but with olive oil, which is nearly of the same consistency. The author is convinced that dynamite with 75 per cent. of explosive substance, as is generally required, may readily be obtained by his process; while, at the same time, all violent pressure or friction is avoided. The cakes, after leaving the bath of nitro-glycerine, have only to be placed to drain, and then wrapped in paper, when they are ready for use.

Trade Notes.

MESSRS. HOWARD HALL & Co. have disposed of their business to Messrs. Warrick Bros.

MR. F. W. FLETCHER, F.C.S., has joined the firm of Lorimer & Milne, chemical manufacturers, of Holloway Road, London.

THE BUSINESS of Mr. Potts, Ilkeston, has been transferred to his son, and will in future be conducted by Mr. J. Potts. The valuation was by Messrs. Collis & Son, Cheadle.

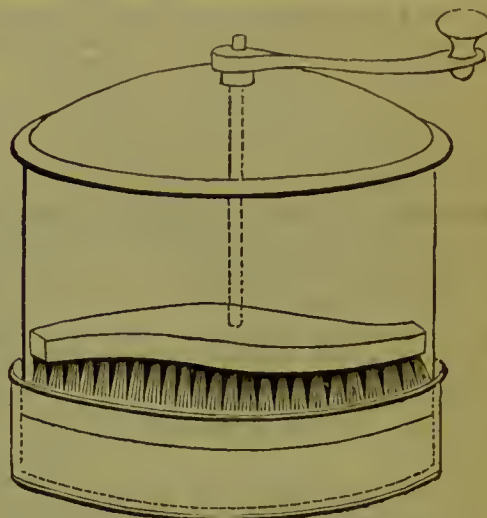
MR. GERAUT, of Farringdon Road, is introducing this year a form of seltzogene capable of holding eight pints. Will not such an apparatus be useful on a chemist's counter during the summer for draughts?

IT WILL be seen from our advertisement pages that the dispute between Mr. H. Bollmann Condry and the Condry's-Fluid Company seems to have broken out afresh, the former having threatened some prosecutions. The company offers to defend any action brought in regard to the sale of their product. If any action is intended, we think it should be brought against the makers direct. It is hardly fair to harass retailers when the original alleged offender is within reach.

VERY ABSORBENT COTTON WOOL.—We have received a sample of cotton wool from Messrs. Sims & Shaw, of Stockport (Mr. E. P. Hornby, proprietor), which possesses such remarkable absorbent properties, that a small piece dropped on the surface of water will almost instantly sink. For surgical purposes it is obvious that there are many uses for which wool of this kind will prove especially valuable. Wherever cotton wool is used for the purpose of absorbing moisture, this preparation will have special qualifications, assuming that there is no chemical reason resulting from the mode of its preparation which will interfere with its employment. It has a rather crisper feeling than ordinary cotton wool, but besides that it does not seem to differ from other samples in physical characters. The makers propose it for the refrigerators in connection with meat-preserving apparatus, the wool being placed in the ventilators to absorb the moisture and germs arising from decomposition. There are other chemical processes requiring a perfectly pure and dry atmosphere, and for these the wool will be adaptable.

THE APPARATUS shown in the accompanying engraving is a small mixing machine, made by Mr. Hancock, of London, and is not quite the same as the mixing machine made by Messrs.

F. & C. Hancock, of Dudley, which we have described on a former occasion. This one is more especially adapted for light powders, and for such it answers admirably. Such mixtures as Gregory's Powder, camphorated chalk, and others that will occur to the minds of our readers, are very rapidly and thoroughly mixed by passing them through this apparatus. The experiment tried in our office was with bole and chalk. Some six or eight ounces of these powders were passed twice through



the sieve of 10,000 to the square inch within about five minutes and without the least dust or mess of any kind. The result was a perfect mixture. Diaphragms of various finenesses are supplied by the maker, and these and the brushes can be changed at pleasure. The principle upon which the machine is worked is obvious from the engraving.

CONTRACT PRICES FOR DRUGS.

WE give below a selection from the tenders for drugs to be supplied to the parish of Birmingham during the forthcoming year:—

	Morris Banks	Phillip Harris	W. R. Jones	T. Wallis Holdsworth
Acid, citric per lb.	s. d.	s. d.	s. d.	s. d.
" Tannic	3 2	2 10	3 0	2 8
Aconite, liniment of, Metby- lated	4 3	3 3	3 11	3 0
" Tincture of	2 6	1 9	2 3	2 0
" Ether	3 6	2 8	3 0	2 8
Aloes, Barbadoes, powdered ..	5 0	4 0	4 4	4 4
" Compound decoction of concentrated	1 8	1 6	1 8½	1 6
Ammonia, aromatic spirit of ..	4 0	3 0	3 4	3 0
Ammoniacum, powdered	2 9	2 6	1 11	1 10
" and mercury plaster	2 6	1 6	1 4	0 0
Ammonium, bromide of	2 9	2 0	2 4	0 0
Antimony, tartrate	3 0	3 4	3 0	2 9
Arsenic and Mercury, solution of Iodide of	2 0	1 8	1 10	1 9
Arsenical solution	1 0	0 10	1 3	1 0
Assafetida, tincture of	0 8	0 4	0 4	0 8
Belladonna, extract of	3 4	3 0	2 8	2 8
" tincture of	4 6	4 0	4 10	4 6
Benzoin, comp. tincture of ..	2 6	1 9	1 9	1 9
Bismuth, subnitrate of	3 4	3 6	2 11	3 0
Borax, powdered	6 6	6 6	6 10	6 0
Burnett's disinfecting fluid, per gallon	0 8	0 7	0 6	0 7
Camphor per lb.	4 6	3 6	3 9	3 6
" Comp. tincture of	1 5	1 2	1 4	1 2
Cantharides	2 4	1 8	1 9	1 9
Castor oil, E.L., best	5 0	4 10	4 6	4 6
Chamomile flowers	0 7	0 6	0 6	0 6
Chloral, hydrate of	1 6	1 0	3 0	2 0
Charcoal, powdered wood	0 4	0 8	0 3	0 4
Chloral, hydrate of	5 6	4 8	5 0	4 4
Chloroform, liquid	0 8	0 2	0 2	0 3

	Morris Banks	Phillip Harris	W. R. Jones	T. Wallis Holdsworth
Chlorodyne (Collis Brown's) per 11/- bottle	9 0	7 4	7 10	7 6
Chloroform (Duncan's) pure per lb.	6 6	5 6	6 0	5 0
" Methylated ..	3 3	2 3	3 0	0 0
Cod liver oil, pale .. per gal.	8 0	0 0	7 3	5 0
Colocyath, powdered, .. per lb.	2 6	2 0	2 2	8 0
" Compound extract of, powdered ..	13 0	8 6	9 0	8 0
" Compound pill of	15 0	12 0	7 6	16 0
Copaiva, balsam of ..	2 0	2 10	2 4	2 4
Cotton wool ..	0 10	0 9	0 9	1 9
Dandelion, extract of ..	2 4	2 0	1 6½	1 7
Ergot, powdered ..	4 6	4 0	4 0	4 0
Galls and opium ointment ..	3 6	3 0	2 8	2 8
" Powdered ..	1 6	1 0	0 11	1 0
Gentian, extract of ..	1 6	1 2	1 4	1 2
" Comp. tincture of ..	2 4	1 10	1 9	1 9
Ginger, powdered ..	0 9	0 8	0 7½	0 9
" Tincture of ..	3 6	2 10	2 8	2 8
Glycerine, best ..	0 10	0 8	0 7½	0 8
Guaiacum, ammoniated tinc- ture of ..	3 4	3 0	2 0	3 0
Helibore, white, powdered ..	1 0	0 8	0 10	0 8
Honey, best ..	0 9	0 7	0 6	0 7
Hops, tincture of ..	2 0	1 10	1 10	1 10
Indian hemp, tincture of ..	4 6	3 9	3 9	4 6
Iodine .. per oz.	1 0	1 3	0 0	0 10
Ipecacuanha .. per lb.	5 6	5 0	5 3	6 0
" Wine of ..	2 4	1 2	1 2	1 3
Iron and quinine, citrate of per oz.	3 4	2 10	2 10	3 8
Iron, perchloride of, tinct. of per lb.	2 10	2 2	2 2	2 0
" Compound syrup of phosphate of ..	1 4	0 10	1 0	0 10
" Wine of ..	1 10	1 0	1 0	1 2
Jalap, powdered ..	2 0	1 6	1 4	1 4
Leeches .. Per 100	10 0	12 0	10 0	0 0
Lime, chlorinated .. per lb.	0 3	0 2	0 1½	0 1½
" Juice ..	0 6	0 6	0 6	0 6
Linseed ..	0 3	0 2	0 2	0 2½
" Meal .. per cwt.	14 6	18 6	13 6	12 0
" Oil .. per lb.	0 5	0 4	0 4	0 4
Lint, best cotton ..	1 10	1 9	2 0	1 11
Lithia, carbonate of .. per oz.	1 4	1 0	1 0	0 9
" Citrate of ..	1 4	1 0	1 0	0 9
Magnesia (calcined) .. per lb.	1 8	1 10	1 4	1 8
" Carbonate of ..	0 7	0 6	0 5	0 5
" Sulphate of per cwt.	8 0	7 0	7 0	8 0
Mercurial pill .. per lb.	2 6	3 0	2 8	2 6
Mercury, ammoniated ..	4 6	4 9	4 4	4 4
" Ointment of ..	2 6	2 8	2 6	2 11
" Ointment of nitrate of ..	2 2	2 0	2 0	2 11
Morphia, acetate of .. per oz.	10 6	10 0	10 0	10 6
Myrrh, powdered .. per lb.	2 6	1 9	2 2	1 9
" Tincture of ..	3 4	3 0	2 8	2 8
Nux Vomica, tincture of ..	3 4	2 10	2 10	2 8
Olive oil .. per gal.	5 0	5 0	4 9	5 0
Opium .. per oz.	1 6	1 6	1 4	1 4
" Battley's sedative, solution, of .. per lb.	18 0	18 0	18 0	18 6
" Tincture of ..	5 0	3 9	3 3	3 6
" Wine of ..	5 0	4 0	4 0	4 0
Peppermint oil of (Hutchkiss') Plaster, adhesive, on linen per dozen yards	4 6	2 9	2 9	3 2
Poppy heads .. per 100	2 0	2 0	1 0	1 6
" Syrup of .. per lb.	0 10	0 7	0 7	0 9
Potash, acid tartrate of ..	1 3	1 0	1 1½	1 2
" Bicarbonate of, pow- dered ..	0 9	0 7	0 7½	0 7
" Solution of ..	0 6	0 2	0 2	0 3
Potassium, bromide of ..	2 8	2 10	2 8	2 4
" Iodide of ..	14 0	16 6	14 0	14 0
Quinia, sulphate of (Howard's) per oz.	11 0	12 0	11 6	11 0
Rhubarb, compound pill of per lb.	4 0	3 0	3 0	3 6
" Powder ..	5 6	1 8	1 8	2 6
" Comp. tincture of ..	3 0	2 3	2 3	3 0
Scammony resin, powdered ..	16 0	11 6	14 0	12 0
Senna, confection of ..	1 0	0 8	0 10	1 0
" Leaves, Tinnivelly ..	0 8	0 4	0 3	0 0
Squill, oxymel of ..	0 7	0 6	0 5	0 6
" Syrup of ..	0 9	0 6	0 5	0 6
" Tincture of ..	2 4	1 9	1 8	1 8
Soap, compound pill of ..	10 6	8 9	7 6	10 0
Soda, bicarbonate of ..	0 3	0 2	0 2	0 3
Spermæti ..	1 6	1 4	1 5½	1 5
Spirit of nitro ..	2 10	2 9	2 8	2 8
Sulphur, ointment of ..	0 10	0 9	0 9	1 0
" Precipitated ..	0 8	0 7	0 7	0 7
" Sublimed ..	0 2	0 2	0 2	0 2
Tar, ointment of ..	1 0	0 10	0 9	0 9
Turpentine, oil of ..	0 6	0 4	0 4	0 4
Valerian, ammoniated tinc- ture of ..	3 4	2 10	2 6	3 0
Zinc, sulphate of ..	0 5	0 3	0 3	0 3

PARISIAN ITEMS.

THE PROPERTY of the Injection Brou, established by the late M. Brou de Laveyssière, has been sold to M. Ferré, proprietor of the Pharmacie Favrot, 102 Rue de Richelieu, Paris.

MESSRS. ROBERTS & Co., English chemists, have taken an additional shop in the Place Vendôme, and have thus considerably extended their premises, in anticipation of the immigration of strangers in 1878.

THE LATEST Parisian novelty is an enoma apparatus combined with a musical box, so arranged that while working the instrument according to its medical duties, it shall at the same time warble forth some of the choice melodies of "La Fille de Madame Angot."

ENGLISH exhibitors at the Paris Exhibition of next year who will require the assistance of an agent in that city to arrange their display and see to their interests will do well to apply to Mr. T. Luscher, 10 Rue de la Paix, who is very well known both to the London and Paris wholesale drug trade.

THE WIDOW of M. Boyer, the proprietor of the Eau de Melisse des Carmes Dechaussés, whose business was until recently conducted under the style of the Veuve Boyer, Henry Renouard et Cie., has lately become the Princess Labomirska, and she consequently removes her name from the shop door, though she still remains interested in the business.

A FRENCHMAN, M. Prat, claims to have discovered another new metal, which, in honour of Lavoisier, he calls Lavesium. He thinks it is somewhat widely disseminated, and is to be found in many minerals. It is of a silvery white colour, malleable, and fusible; several of its spectrum lines coincide exactly with the spectrum lines of copper, from which fact he believes the new metal contains copper.

THE CHEMICAL SOCIETY.

Thursday, March 15, 1877.

PROFESSOR ABEL, F.R.S., President, in the chair.

After the minutes of the preceding meeting had been read and confirmed, the secretary read a paper by Dr. W. A. Tilden and Mr. W. A. Shenstone "On Isomeric Nitroso Terpenes." The next communication, entitled "Preparation of Copper-zinc Couples," by Dr. J. H. Gladstone and Mr. A. Tribe, was given by the former, with experimental illustrations. The other papers were "On Chromium Pig Iron," by Mr. E. Riley; a "Note on Gardenin," by Dr. J. Stenhouse and Mr. C. E. Groves; two papers by Mr. M. M. P. Muir, entitled "Additional Note on a Process for Estimating Bismuth Volumetrically," and "On Certain Bismuth Compounds, Part IV.," and one by Dr. M. Simpson and Mr. C. O'Keeffe "On the Determination of Urea by Means of Hypohomite."

Thursday, April 5, 1877.

PROF. ODLING, F.R.S., in the chair.

A lecture on the discrimination of crystals by their optical characters was delivered by Prof. N. S. Maskelyne, F.R.S. After a few general remarks on the use to the chemist of the methods employed by crystallographers, the lecturer proceeded to consider the methods of determining the symmetry of crystals by their optical characters. The origin and meaning of various terms used in crystallography having been explained and illustrated by models, &c., the lecturer threw on the screen, by means of a polarising apparatus and the electric light, the beautiful coloured effects produced by crystals of cerusite, barytes, borax, &c., the effect of heat in altering the position of the optical axes of a crystal of gypsum being especially beautiful. In conclusion the lecturer pointed out the ready means which the examination of the optical characters of a crystal under the polarising microscope often afforded to the chemist of acquiring a great deal of information in a very short time, and expressed a belief that if chemists would work up suitable groups of crystals for examination by the crystallographer very important knowledge as to the functions of various groups of molecules in a crystal would be gained. After a vote of thanks to the lecturer, the society adjourned till April 19.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL.

- Tomes' "Dental Surgery," new, price 9s. Herbert B. Stevenson, Crescent, Todmorden, Lancashire.
- Retorts, stands, hell jars, &c., for student's laboratory; very cheap. Payne, Market Rasen.
- A wrought-iron tincture press, two gallons, cost 6*l.* 10s., price 4*l.* E. Miller, Wellington Place, Hastings.
- A copper still, complete, three gallons, price 3*l.* E. Miller, Wellington Place, Hastings.
- Sixteen earboys, from two gallons to one gallon each; reasonable offer accepted. J. E. Buck, Haverhill.
- Pharmaceutical Journal*, posted every Monday; what offers? S. P. S., Apothecaries' Hall, Acton, W.
- Hancock's mixing machine, cost 25s., good as new, invaluable, price 20s., or offers. Appleton, Attercliffe.
- 48-in. all-bright bicycle, perfect condition. Send for particulars to Geo. W. Howard, Calverley, Tunbridge Wells.
- Royle's "Materia Medica," 5s. 6*d.* Norman, Hewlins, Leatherhead, Surrey.
- "Doré Gallery," 25 2s. parts, 1s. 6*d.* each. Carman, Chemist, Chester.
- Castor oil plant; wanted offers for dried leaves in quantities. F. J. Shand, Castle Mills, Edinburgh.
- Pill machine, 36, marble slab; also a few shop bottles, cheap. Sheldrake, Chemist, Keighley.
- Cistern, suitable for petroleum, height 5 feet, circumference 9 feet, fitted with large brass tap. What offers? 26/37.
- 10½ lbs. potass. iodid., pure English, 12s. per lb., cash. Hihbert & Son, Neath.
- Nitrous oxide gasometer, 60 gallons, good condition; price 5*l.* "Dentist," 60 Concord Street, Leeds.
- Gold-labelled stopper bottles, nearly new, for sale; 30-pill machine. Martin, Clevedon.
- A few yards genuine porous plaster at 7s. each; also a few dozens 1s. 1½*d.*, 7s. 21/38.
- The Chemist and Druggist* for 1874, 1875, and 1876; what offers or exchange? Butler, Chemist, Tunbridge Wells.
- A dentist's lathe, show-case, specimens of teeth and materials, to be sold cheap. Apply, "Chemicus," 151 Hoxton Street, N., London.
- A large 4-feet mahogany show-case, and a small one, for 35s., cost more than double. "Chemicus," 151 Hoxton Street, N., London.
- A first-class binocular microscope, with five ¼-inch English objective, also 2 and 1-inch, with a quantity of apparatus, cheap. "Chemicus," 151 Hoxton Street, N., London.
- Watkins' "Cyclopædia," 5s.; Nicholson's "Dictionary, Chemistry," with plates, 5s. 6*d.*, well bound; Edwards' "Latin Grammar," new, 1s. 6*d.* Stewart, Saffron Walden, Essex.
- Copper still, 24 gallons, with condensing worm, complete, to be sold a bargain. Apply by letter to C. R., care of Barron, Squire & Co., Bush Lane, E.C.
- Immediately, a first-class spider-wheel bicycle, quite new, cost 17*l.*, will take 14*l.*, or best offer. Hart, Kegworth, near Derby.
- Student's chemical chest, fitted expressly for Minor and Major, private study, with reagents, apparatus, complete. Particulars on application. 17/36.

- Magneto-electric machine, mahogany lock-up case, powerful double magnets, perfect; 16s. "Medicus," 55 Great King Street, Birmingham.
- Large 12-air musical box, handsomely inlaid, glass inner lid, patent winder, equal to new; 6*l.* 10s. "Medicus," 55 Great King Street, Birmingham.
- Lime cream which will not separate. Upon receipt of eighteen stamps full and clear directions will be sent for the above. 29/33.
- Dr. Scott's patent double-action clyso-pump, with jointed tubes, in perfect condition, in mahogany case, equal to new; price 1*l.* M. S., 107 King Street, Hammersmith.
- Thermometer, for chemical experiments, 17 in. long, in strong cardboard case; price 5s. M. S., 107 King Street, Hammersmith.
- What offers for *Pharmaceutical Journal*, 1876, complete; also eight 2s. numbers of a capital work on chemistry. Mortiboy, 53 Greengate Street, Stafford.
- Galvanic battery, complete, and in good working condition, also small telescope; will exchange for small, good microscope. Henderson, 45 Eglinton Street, Glasgow.
- Pulv. cinchonæ pallid. opt., 2s. 9*d.*; morphia hydrochlor., 9s. 3*d.*, samples sent; new 5-grain pill machine, 15s. Padwick, Red Hill.
- A Pulvermacher's electric chain hand, cost 4 guineas, very little used, and in good condition, for 30s. H. Leonard, 71 Millbrook Road, Stockwell, S.W.
- One of Evans' 4*l.* 4s. Materia Medica cabinets, splendid condition, 3*l.* 3s.; British Pharmacopœia, new, 4s. Thomas Slater, Stone, Staffordshire.
- Best gilt compo dental springs, 18s. per gross; best gilt compo swivels and bolts, 6s. per doz. sets. "Dentist," 60 Concord Street, Leeds.
- Glass show-case, similar to fig. 40 Maw's catalogue, to be sold, a bargain, or will exchange for saleable patents. Butler, Chemist, Tunbridge Wells.
- Twenty to thirty crates 3-oz., 4-oz., 6-oz., and 8-oz. dispensing bottles at 8s. 6*d.* and 9s. 6*d.* per gross. Carriage paid in crates of any one size. 12/48.
- Very useful to a chemist; a printing press that will print any matter 8 inches by 10 inches, with type, type-case, roller, slab, ink, composing stick, blocks, &c. F. G. C., 347 High Street, Lincoln.
- Two hundred lbs. fine Turkey opium; B.P. percentage of morphia; in splendid condition; not less than 7 lbs.; 20s. per lb., net cash, carriage paid. Rohson, Chemist, Grimsby.
- Polished oak medicine chest, complete; size, 12 in. by 9, and 10 deep (new), containing 22 bottles, 5 jars, with contents, scales and weights, mortar and pestle, spatula, &c.; price 3*l.* B., 107 King Street, Hammersmith.
- Pharmaceutical Journal*, vols. i. and ii. complete; vol. iii., May 17, 1873, missing; vols. v. and vi. complete; Pharmacopœia, 1876; to be sold cheap. L. Moody, 7 Guildhall Street, Lincoln.
- Remarkably cheap. Smith's "Philosophy of Health," 7s. 6*d.*; Cottle's "Physiology," 3s. 3*d.*; Royle's "Manual," 5s. 6*d.*; Beasley's "Formulary," 1s. 3*d.*; "Dental Anatomy," 3s. 3*d.*; "B.P.," 1864, 1s. 3*d.* Prosser, Chemist, Gateshead.
- Chemist and Druggist*, 2 years; *Pharmaceutical Journal*, 90 numbers, all unbound; Churchill's "Diseases of Children;" counter scales, on mahogany stand, with drawer. Offers requested. Stead, Chemist, Lees, near Manchester.
- The framework and sides (not the top) of a well-made counter, used in a bank; it is 9 feet 10 inches by 2 feet 9 inches; has four good drawers with locks, two keys only; price 30s. Jackson, Chemist, Crediton. No post cards.
- Offers wanted for *Pharmaceutical Journal* from January to November inclusive, 1862; for the years 1867, 1869, 1870, 1871; and from July, 1872, to December, 1873, in one lot or lots. C. George, Chemist, Weston Street, Sheffield.
- Dows' 6-syrup ice-cream soda machine, a bargain; two 2s. 9*d.* Lewis's infallible liniment, 3s.; ten 1s. Renoro, 4s.; five 6*d.*, twelve 3*d.* Stedman's food, 2s. 6*d.* F. Wheeler, Guildford.
- Balauze; ten-inch beam, divided; short pan, for specific gravity, thermometer, &c., packed in mahogany box; weighs to 1-20th grain; 30s. F. Phillips, 374 Bristol Road, Birmingham.

Brand's "Chemistry," "Cæsar," Hugo's "Medical Atoms," Powell's cough electuary, 2 Rowland's odonto, 3 Macassar oil, set of drum sieves, complete, all in good condition. Kathro, Micheldean, Gloucester.

Hydrometers, German, two for sale; specific gravity from 0.700 to 1.000, the other 1.000 to 1.850; temperature 60° F.; in strong cardboard cases; price 6s. M. S., 107 King Street, Hammersmith.

Herbarium of British plants, useful for Minor students, 2s. 6d.; Williamson's "Chemistry," 3s. 6d.; *The Chemist and Druggist and Pharmaceutical Journal* for 1876? What offers? Tully, Chemist, Tunbridge Wells.

Offers wanted. A good strong brass pump, weighing 14 lbs., with 3 ft. tubing, in working order; has been used for paraffin; cost 30s.; second-hand black mackintosh, Cooper, Box & Co., best make, 44 inches long, cost 44s. Address Binford, Post Office, Marlow.

Bale new and cleanginger-beer corks, 2d. per gross; wine corks, 6d. per gross; powerful microscope, with rackwork adjustment, in mahogany box, new, 10s. 6d.; also bright spider-wheel bicycle, 50-inch driving wheel, will guarantee new and perfect; price 9l. Halford, Chemist, New John Street, Birmingham.

Manuscript notes on chemistry, botany, and Materia Medica, useful for preparing for Minor, containing all the required information in these subjects, 5s. each, or 12s. 6d. the lot, including botanical specimens; book of recipes for horse and cattle medicines, result of 25 years' experience, 5s., post free. "Chemist," care of Mr. Fitness, Rotherfield.

Sowerby's "Introduction to Botany," with 640 beautifully coloured plates, only 16s.; student's herbarium of officinal and other plants, 10s. 6d.; compound microscope, with three powers, condenser, reflector, &c., 12s. 6d.; Bell "On Cowpox," coloured plates, scarce, 10s. 6d.; "Science Gossip," 1876-77, half price. "Medicus," Newferry, Birkenhead.

Southall's Cabinet, 17s.; Beeton's "Dictionary, Science, Art, Literature," twenty-six 6d. parts, plates and illustrations, 8s.; Jones's "Surgery" (1821), 14s., for 5s.; Norton "On Rheumatism," 2s. 6d., for 1s. 3d.; Stokes' "Use of Stethoscope," 6s. 6d., for 2s. 6d.—all carriage free; Salmon's "Translation of London Dispensatory" (1676), 894 pages; offers requested. G. H. Burley, 42 Ousegate, Selby.

Sale or exchange.—Four years of *The Chemist and Druggist*, and "The Year-Book of Pharmacy," from beginning, quite clean; 4 iron scroll brackets, for holding show bottles in window, cheap; Castle's "Manual of Surgery," with plates, 5s. 6d.; Beasley's "Pocket Formulary," 2s. 9d.; Johnston's "Flora of Berwick-upon-Tweed," scarce, 2 vols., 8s. 9d.; Dr. Riadore's "Inhalations," 2s. 6d.; Von Humboldt's "Cosmos," 1 oz. ambergris, grey. 41/109.

A quantity of Tomlinson's patent specie jars at 25 per cent. discount; cigar cases from 16s. each; tooth brush cases and dental specimen cases; a range of pine drawers, shelves, and cornice, 6 feet long, 95s.; glass-case, as Maw's No. 23, 100s.; wall cases, with curved ends, unglazed, 7 feet long, with 4-feet angular return, maple, with cedar beads, 200s.; counter scales, at job prices; dental operating chair, 12l.; set of eleven Clendon's forceps, in mahogany case, 45s.; eight do., in roll leather pouch, slightly soiled, 30s.; mahogany folding medicine chest, complete, 70s.; brass enemas, in cases, at 5s., 7s., 9s., and 10s.; 30 doz. rose lip salves, vegetable ivory, at 2s. 6d. 8/38.

Handsome superior air-tight mahogany wall cases, with plate-glass circular end, with plate-glass doors and plate-glass cupboard and a silvered plate-glass back, plate-glass shelves on movable bronzed brackets, &c., 20 feet long, 8 feet 6 high; thirty mahogany wall cases, with and without cupboards, and in all sizes; one 5 feet 7 long; mahogany dispensing screen, with mirror in the centre and a case at each end, with silvered plate-glass backs, &c.; one upright mahogany case, with desk at back, 2 feet 6 long; one upright mahogany counter case, 3 feet 6 long; 50 flat, bent, and upright mahogany counter cases, all sizes; two soda water stands; 4 mahogany counters, with and without return ends; 20 mahogany-top counters, with and without drawers, all sizes; 3 pill machines; 4 tincture presses; counter scales as figs. 1, 6, and 7 Maw's; one 80-gallon oil cistern; pair handsome specie jars, with royal arms, &c.; 800 gold-labelled shop bottles, jars, &c. all sizes. Lloyd Rayner, 333 Kingsland Road, London, N.

Carriage paid. Ganot's "Physics," 10s.; British Pharmacopœia, with Appendix, 4s.; Fownes' "Chemistry," 11th edition, 11s. 6d.; Bentley's "Botany," 8s.; Balfour Stewart's "Physics," 2s. 9d.; Roscoe's "Chemistry," 2s. 9d.; Lescher's "Elements of Pharmacy," 3s. 6d.; Lindley's "School Botany," 2s.; good condition. Post office order to W. C. Kidd, 12 Colby Terrace, Gipsy Hill, London, S.E.

Miller's "Chemical Physics, Organic and Inorganic Chemistry," 3 vols., cost 2l. 12s. 6d., 15s.; Brande's "Manual, Chemistry and Pharmacy," 4 vols., calf gilt, fine set, 10s.; Arnott's "Physics," 2 vols., 31s. 6d., 6s.; Churchill's "Manuals," 6 vols., pub. 12s. 6d. each, lot for 20s.; Cooper's "Surgical Dictionary," 7th edition, half Russia, 30s., 7s. 6d.; Skey's "Surgery," illustrated, 18s., 6s.; Elliot & Storer's "Inorganic Chemistry," 10s. 6d., 5s. 6d.; Nevins' "Translation Pharmacopœia," 1851, a complete Materia Medica, 18s., 6s.; Graham's "Chemistry," 26s., 7s. 6d.; Coles' "Venereal Diseases," 9s., 4s. 6d.; Watson's "Practice of Physic," 2 vols., 4th edition, 34s., 7s. 6d. M. Percy, 12 James Street, Haymarket, S.W.

A nest of small drawers, 7 ft. long, 3 ft. high, 126, at 1s. each, white china knobs; a nest of mahogany fronted do, 10 ft. 6 in. long, 52 drawers, at 2s.; two 8-ft. counters; one 10-ft. ditto; nest of drawers, shelves over and lockers under, 3 ft. 2 long, 4l.; soda-water stands, 2l. 10s. and 4l. 10s.; sponge case, 92, 5l.; a dispensing screen, 6 ft. 9 long, glass case at each end, looking-glass centre, with marble slab in front, 8l. 10s.; a ditto, 7 ft. 6 long, 9l.; a 5-ft., as 16l. 6l. 10s.; a 6-ft. plate-glass counter case, as 105, 12 in. wide, 6l. 10s.; a ditto, 15 in. wide, 7l. 10s.; a desk and case, 65s.; a 2 ft. 10 in., as 10l. 3l. 3s.; a 2 ft. 9, as 96, 60s.; a tooth-brush case, as 52, 30s.; a 2-ft. case, as fig. 7, 40s.; an upright case for front of side counter, to stand on floor, 4 ft. 6 long, marble top, 5l.; a 6 ft. 6, as 96, 6l. 10s.; a 6-ft., as fig. 99; one sheet of plate glass, 7l.; a pair specie jars, 28 in. high, Royal Arms, glass gold covers, 4l. 10s. pair; several smaller, equal to new, 18 in. high and upwards, glass gold covers, 50s. pair; four 5-gal. carboys, cut stoppers, 20s. each; two 10-gal. ditto; 50 smaller ditto; three 4-gal. cylinder shape, 10s. each; 500 ointment jars; scales; jujube jars; carboy stands; six 14-in. specie jars, gold covers, elaborately labelled, 9s. each; 6 ditto, 10 in. high, 6s. 6d. each; looking-glass, &c. Natali, 213 Old Street, E.C.

WANTED.

Soda-water stand, as Maw's fig. 59; state lowest price. 23/35.

Set of drawers for under counter. White, Chemist, Southsea.

A tall zinc pestle and mortar, for outside shop; must be cheap; state lowest to J. Greaves, Crewkerne, Somerset.

Small vulcaniser, and dentists' general appliances. "Dentist," 1 Sloane Square, London.

Dentist's outside show-case, furnished. Full particulars to Jones, Chemist, Wavertree, Liverpool.

A Materia Medica cabinet (Southall's). J., 16 Buxton Crescent, W.C.

Two large show carboys; state size and price. S. Harry, Okehampton.

Cistern suitable for benzoline; state size and lowest price. W. Fletcher, Chemist, Ilkeston.

Cooley's "Cyclopædia" and Fownes' "Chemistry," latest editions. Longley, Chemist, Leeds.

Pharmaceutical Journal for July 12, 1873, state price. W. Darling, Oxford Street, Manchester.

Nest of large drawers about 5 feet square; also drawers for under counter, height 2 feet 8½ inches. W. Fletcher, Chemist, Ilkeston.

Ash's vulcaniser, two-flask size, portable preferred; must be nearly new. Herbert Stevenson, Crescent, Todmorden, Lancashire.

In good condition, an Evans, Lescher & Evans' or Southall's Materia Medica Cabinet, and a Lescher's book on "Pharmacy." W. H. Stott, 11 Clifton Street, Scarborough.

One of Horniman's tea models of the two Chinamen, with glass shade, for window; also one of Horniman's tea store tins for window; also soda-water stand with marble top and holes underneath for bottles. J. Touks, Chemist, Bewdley.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mining Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at those market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.		1877.	1876.
ACIDS—		s. d.	s. d.
Acetic	per lb.	0 3½ to 0 0	0 3½ to 0 0
Citric	per lb.	2 7 .. 2 7½	2 8 .. 2 9
Hydrochloric	per owt.	5 0 .. 7 0	4 0 .. 7 0
Nitric	per lb.	0 4½ .. 0 0	0 5 .. 0 5½
Oxalic	per lb.	0 5 .. 0 5½	0 5 .. 0 0
Sulphuric	per lb.	0 0½ .. 0 0	0 0½ .. 0 1
Tartaric crystal ..	per lb.	1 5½ .. 0 0	1 6 .. 0 0
powdered ..	per lb.	1 5½ .. 0 0	1 6 .. 0 0
ANTIMONY ore	per ton	240 0 .. 300 0	280 0 .. 300 0
crude ..	per cwt.	42 0 .. 0 0	38 0 .. 0 0
star	per cwt.	54 0 .. 55 0	61 0 .. 0 0
ARSENIC, lump	per cwt.	26 0 .. 26 6	28 6 .. 29 0
powder	per cwt.	0 0 .. 0 0	13 3 .. 0 0
BRIMSTONE, rough ..	per ton	120 0 .. 130 0	150 0 .. 0 0
roll ..	per cwt.	9 6 .. 10 6	10 0 .. 10 3
flour ..	per cwt.	12 6 .. 13 0	12 6 .. 15 0
IODINE, dry	per oz.	0 10½ .. 0 10½	0 5½ .. 0 0
IVORY BLACK, dry ..	per cwt.	8 6 .. 0 0	8 6 .. 0 0
MAGNESIA, calcined ..	per lb.	1 10 .. 0 0	1 6 .. 0 0
MERCURY	per bottle	150 0 .. 0 0	200 0 .. 0 0
MINIUM, red	per cwt.	23 3 .. 0 0	24 6 .. 25 0
orange ..	per cwt.	35 6 .. 0 0	87 0 .. 0 0
PRECIPITATE, red ..	per lb.	3 11 .. 0 0	4 6 .. 0 0
white ..	per lb.	3 10 .. 0 0	4 5 .. 0 0
PRUSSIAN BLUE ..	per lb.	0 0 .. 0 0	0 0 .. 0 0
SALTS—			
Alum	per ton	140 0 .. 145 0	147 6 .. 155 0
powder	per ton	157 6 .. 160 0	160 0 .. 165 0
Ammonia:			
Carbonate	per lb.	0 5 .. 0 5½	0 5 .. 0 5½
Hydrochlorate, crude,			
white	per ton	560 0 .. 070 0	700 0 .. 0 0
British (see Sal Am.)			
Sulphate	per cwt.	360 0 .. 880 0	370 0 .. 880 0
Argol, Cape	per cwt.	80 0 .. 90 0	92 0 .. 100 0
Red	per cwt.	57 0 .. 79 0	75 0 .. 91 0
Opport, red ..	per cwt.	33 0 .. 83 6	88 6 .. 84 0
Sicily	per cwt.	60 0 .. 62 0	60 0 .. 62 6
Ashes (see Potash and Soda)			
Bleaching powd.	per cwt.	6 9 .. 7 0	7 9 .. 8 0
Borax, crude	per cwt.	26 0 .. 40 0	32 0 .. 50 0
British refined ..	per cwt.	40 0 .. 0 0	53 0 .. 0 0
Calomel	per lb.	3 4 .. 0 0	4 0 .. 0 0
Copper:			
Sulphate	per cwt.	21 9 .. 22 0	24 0 .. 24 6
Copperas, green ..	per ton	60 0 .. 62 6	65 0 .. 70 0
Corrosive Sublimate p. lb.		2 9 .. 0 0	3 5 .. 0 0
Cr. Tartar, French, p. owt.		102 6 .. 104 0	110 0 .. 0 0
brown ..	per cwt.	95 0 .. 0 0	90 0 .. 92 6
Epsom Salts	per cwt.	4 9 .. 5 6	5 3 .. 6 6
Glauber Salts	per cwt.	8 6 .. 4 6	4 6 .. 5 6
Lime:			
Acetate, white, per cwt.		11 0 .. 20 0	11 0 .. 20 0
Magnesia: Carbonate ..	per cwt.	47 6 .. 0 0	42 6 .. 0 0
Potash:			
Biobromate	per lb.	0 4½ .. 0 4½	0 4½ .. 0 5
Carbonate:			
Potashes, Canada, 1st			
sort	per cwt.	24 6 .. 25 0	27 6 .. 0 0
Pearlashes, Canada, 1st			
sort	per cwt.	35 0 .. 0 0	80 0 .. 0 0
Chlorate	per lb.	0 9 .. 0 9½	0 9½ .. 0 9½
Prussiate	per lb.	0 11½ .. 1 0½	1 0½ .. 0 0
red	per lb.	2 1 .. 2 2	3 2 .. 3 3
Tartrate (see Argol and Cream of Tartar)			
Potassium:			
Chloride	per cwt.	0 0 .. 0 0	7 0 .. 0 0
Iodide	per lb.	7 9 .. 8 0	8 0 .. 0 0
Quinino:			
Sulphate, British, in			
bottles	per oz.	15 0 .. 15 6	7 2 .. 7 0
Sulphate, French ..	per lb.	15 0 .. 15 6	6 6 .. 0 0
Sal Acetate	per lb.	0 7½ .. 0 8	0 8 .. 0 8½
Sal Ammoniac, Brit. cwt.		44 0 .. 45 0	44 0 .. 45 0
Salt-petre:			
Bongal, 6 per cent. or			
under	per cwt.	20 3 .. 21 0	18 3 .. 19 0
Bongal, over 6 per cent.			
per cwt.		19 0 .. 20 0	17 6 .. 18 0
British, refined ..	per cwt.	23 6 .. 24 9	21 9 .. 23 6
Soda: Bicarbonate, p. cwt.		11 9 .. 12 0	11 0 .. 0 0
Carbonate:			
Soda Ash ..	per deg.	0 2 .. 0 0	0 2 .. 0 0
Soda Crystals ..	per ton	80 0 .. 82 6	85 0 .. 87 6
Hypo-sulphite ..	per cwt.	0 0 .. 0 0	0 0 .. 0 0
Nitrate	per cwt.	12 6 .. 0 0	11 3 .. 11 6
SUGAR OF LEAD, White cwt.		87 6 .. 38 0	40 0 .. 0 0
SUGAR OF LEAD, Brown, cwt.		27 0 .. 0 0	27 0 .. 0 0
SULPHUR (see Brimstone)			

1877.		1876.	
s. d.	s. d.	s. d.	s. d.
VENDIGRIS	per lb.	1 1 to 1 5	1 1 to 1 5
VERMILION, English ..		2 8 .. 0 0	3 0 .. 0 0
China ..		2 9 .. 0 0	4 0 .. 0 0
DRUGS.			
ALOE, Hopatio	per owt.	70 0 .. 160 0	60 0 .. 160 0
Socotrine ..		65 0 .. 170 0	65 0 .. 200 0
Cape, good ..		49 0 .. 50 0	38 0 .. 39 0
Inferior		41 0 .. 48 0	22 0 .. 35 0
Burbaodes ..		55 0 .. 190 0	45 0 .. 210 0
AMBERGRIS, grey	oz.	60 0 .. 75 0	55 0 .. 60 0
BALSAM—			
Canada	per lb.	1 1 .. 0 0	1 8 .. 0 0
Capivi		1 7 .. 1 9	2 3 .. 2 6
Peru		5 0 .. 0 0	4 10 .. 6 0
Tolu		7 6 .. 8 6	6 0 .. 6 0
BARKS—			
Canela alba	per cwt.	20 0 .. 24 6	0 0 .. 0 0
Cascarilla		17 0 .. 21 0	20 0 .. 25 0
Poru, crown & grey ..	per lb.	1 9 .. 3 3	1 5 .. 2 11
Calisaya, flat ..		3 0 .. 7 6	2 6 .. 4 7
" quill ..		4 6 .. 9 9	2 6 .. 4 7
Carthagena ..		5 0 .. 6 0	1 5 .. 2 2
Columbian ..		2 0 .. 7 6	1 2 .. 3 0
E. I.		3 0 .. 15 6	2 0 .. 6 0
Pitayo		0 0 .. 0 0	0 6 .. 1 9
Red		2 0 .. 4 0	1 8 .. 4 6
Buchu Leaves		0 1 .. 1 1	0 1 .. 1 1
CAMPOR, China ..	per owt.	80 0 .. 85 0	09 0 .. 0 0
Japan ..		85 0 .. 90 0	0 0 .. 0 0
Refin. Eng. ..	per lb.	1 2½ .. 0 0	1 0 .. 1 1
CANTHARIDES		2 6 .. 3 6	3 8 .. 4 0
CHAMOMILE FLOWERS ..	p. cwt.	75 0 .. 250 0	35 0 .. 60 0
CASTOREUM	per lb.	9 0 .. 30 0	6 0 .. 28 0
DRAGON'S BLOOD, lp. p. owt.		180 0 .. 285 0	110 0 .. 200 0
FRUITS AND SEEDS (see also Seeds and Spices).			
Anise, China Star ..	per owt.	90 0 .. 105 0	105 0 .. 112 6
Spanish, &c.		28 0 .. 40 0	26 0 .. 40 0
Beans, Tonquin ..	per lb.	1 7 .. 2 7	1 6 .. 4 0
Cardamoms, Malabar			
good		8 7 .. 4 3	4 0 .. 4 8
inferior ..		0 10 .. 8 6	1 0 .. 8 0
Madras ..		1 10 .. 3 5	2 0 .. 3 6
Ceylon ..		4 11 .. 5 1	5 5 .. 5 8
Cassia Fistula	per cwt.	10 0 .. 32 0	8 0 .. 14 0
Castor Seeds		5 0 .. 10 6	5 0 .. 10 6
Cocculus Indicus ..		9 0 .. 11 0	18 0 .. 15 0
Colocynth, apple ..	per lb.	0 6 .. 0 11	0 6 .. 0 11
Croton Seeds	per cwt.	30 0 .. 85 0	44 0 .. 45 0
Cubebs		27 0 .. 28 0	80 0 .. 0 0
Cummin		18 0 .. 33 0	19 0 .. 23 0
Dividivi		10 0 .. 15 0	12 0 .. 16 0
Fenugreek		8 0 .. 13 0	18 0 .. 22 0
Guinea Grains ..		20 0 .. 0 0	21 0 .. 0 0
Juniper Berries ..		8 0 .. 10 0	10 0 .. 11 6
Nux Vomica		8 9 .. 13 8	7 0 .. 12 6
Tamarinds, East India,		10 0 .. 15 6	13 0 .. 20 0
West India ..		10 0 .. 15 6	8 6 .. 16 0
Vanilla, large	per lb.	39 0 .. 45 0	50 0 .. 60 0
inferior ..		15 0 .. 38 0	21 0 .. 30 0
GINGER, Preserved, ..	per lb.	0 5 .. 0 6½	0 5½ .. 0 10
HONEY, Chili	per cwt.	40 0 .. 47 6	35 0 .. 54 0
Jamaica ..		35 0 .. 47 0	44 0 .. 58 0
Australian ..		0 0 .. 0 0	43 0 .. 55 0
IPECACUANHA	per lb.	4 2 .. 4 10	0 0 .. 0 0
ISINGLASS, Brazil ..		2 6 .. 4 10	2 2 .. 4 9
Tongue sort ..		3 0 .. 5 6	2 7 .. 5 4
East India ..		2 0 .. 5 3	1 3 .. 5 0
West India ..		3 9 .. 4 6	4 1 .. 4 6
Russ. long staple ..		8 0 .. 15 0	9 0 .. 12 6
inferior ..		0 0 .. 0 0	0 0 .. 0 0
Simovia ..		2 0 .. 3 3	3 0 .. 4 0
JALAP, good		0 10 .. 0 11½	0 8 .. 0 10
infer. & stems ..		0 8 .. 0 9½	0 6 .. 0 8½
LEMON JUICE	per degree	0 1 .. 0 1½	0 15 .. 0 2
LIME JUICE	per gall.	1 3 .. 1 8	1 6 .. 2 0
LIQUORICE, Spanish ..	per cwt.	0 0 .. 0 0	0 0 .. 0 0
Liquorice Root ..		12 0 .. 30 0	16 0 .. 30 0
MANNA, flaky	per lb.	5 6 .. 6 0	5 6 .. 6 0
small		1 6 .. 1 9	1 6 .. 1 9
MUSK, Pod	per oz.	15 6 .. 50 0	15 0 .. 50 0
Grain		35 0 .. 60 0	37 0 .. 61 0
OILS (see also separate list)			
Almond, expressed ..	per lb.	1 4 .. 0 0	1 3 .. 0 0
Castor, 1st pale		0 4 .. 0 4½	0 3½ .. 0 0
second		0 3½ .. 0 4	0 3 .. 0 8½
Cod Liver	per gall.	4 6 .. 7 6	3 4 .. 7 3
Croton	per oz.	0 2½ .. 0 0	0 2½ .. 0 0
Essential Oils:			
Almond	per lb.	20 0 .. 0 0	24 0 .. 25 0
Anise-seed		6 8 .. 0 0	6 9 .. 0 0
Bay	per cwt.	0 0 .. 0 0	65 0 .. 70 0
Bergamot	per lb.	10 0 .. 15 0	10 0 .. 15 0
Cajuput	per bottle	3 0 .. 3 6	2 9 .. 3 0
Caraway	per lb.	9 0 .. 9 3	9 0 .. 9 3
Cassia		3 10 .. 0 0	3 10 .. 4 0
Cinnamon	per oz.	2 6 .. 6 6	2 6 .. 6 6
Cinnamon-leaf ..		0 2½ .. 0 3	0 2 .. 0 3
Citronello		0 2 .. 0 0	0 13 .. 0 2
Clove	per lb.	8 9 .. 0 0	9 3 .. 9 6
Juniper		0 0 .. 0 0	0 0 .. 0 0
Lavender	per lb.	1 8 .. 0 0	1 8 .. 7 0
Leimon		7 0 .. 9 6	7 0 .. 9 6
Lemongrass	per oz.	0 2½ .. 0 0	0 2½ .. 0 2

1877.				1876.			
	s. d.	s. d.		s. d.	s. d.		s. d.
Essential Oils, continued.—							
Neroli	3 0	0 0		3 0	0 0		
Nutmeg	0 6½	0 7		0 7	0 7½		
Orange	6 0	9 0		0 0	0 0		
Otto of Roses	13 0	23 0		13 0	23 0		
Patchouli	2 0	3 0		2 0	3 6		
Peppermint:							
American	13 0	14 3		10 0	17 0		
English	34 0	35 0		32 0	33 0		
Rosemary	2 0	2 6		2 0	2 6		
Sassafras	2 3	2 0		0 0	0 0		
Spearmint	12 0	15 0		14 0	16 0		
Thyme	0 0	0 0		0 0	0 0		
Mace, expressed	0 6	0 10		0 6	0 10		
Opium, Turkey	20 0	24 0		10 6	21 6		
inferior	10 0	18 0		14 0	18 0		
QUASSIA (bitter wood) per ton	100 0	140 0		100 0	200 0		
RHUBARB, China, good and fine	2 5	4 0		2 10	4 8		
Good, mid. to ord. ..	0 8	1 4		0 9	2 4		
Dutch Trimmed ..	0 0	0 0		0 0	0 0		
ROOTS—Calumba	40 0	42 0		23 0	31 0		
China	30 0	32 0		19 0	24 0		
Chiretta	0 2½	0 3		0 3½	0 4		
Galangal	20 0	26 0		19 0	22 0		
Gentian	23 0	24 0		23 0	24 0		
Helieboro	0 0	0 0		0 0	0 0		
Orris	26 0	75 0		26 0	75 0		
Pellitory	70 0	76 0		0 0	0 0		
Pink	0 0	0 0		0 0	0 0		
Rhatany	0 4	1 0		0 4	1 0		
Seneca	3 0	3 0		4 0	4 3		
Snake	0 0	0 6½		0 7	0 8		
SAFFRON, Spanish ..	33 0	37 0		31 0	36 0		
SALEP	0 0	0 0		0 0	0 0		
SARSAPARILLA, Lima per lb.	0 5	1 7		0 0	0 0		
Guayaquil	1 9	2 0		0 0	0 0		
Honduras	1 1	1 6		1 3	1 10		
Jamaica	2 6	3 2		2 0	8 0		
SASSAFRAS	0 0	0 0		0 0	0 0		
SCAMONY, Virgin	24 0	30 0		30 0	45 0		
second & ordinary ..	0 0	22 0		8 0	24 0		
SENNA, Bombay	0 1	0 4		0 1	0 4		
Tinnivelly	0 2½	2 0		0 2	1 3		
Alexandria	0 5	2 5		0 5	2 8		
SPERMACEETI, refined ..	1 4	0 0		1 6	0 0		
American	1 0	1 2		1 2	0 0		
SQUILLS	0 1½	0 3½		0 3	0 4		
GUMS.	£ s.	£ s.		£ s.	£ s.		
AMMONIACI drop .. per cwt.	2 2	2 10		1 10	2 12		
Imp.	1 0	1 14		1 0	1 9		
ANIMI, fine washed ..	11 0	12 15		10 0	10 15		
bold scraped ..	9 15	10 15		8 15	0 15		
sorts	6 15	9 10		6 0	8 5		
dark	4 0	0 19		3 5	6 10		
ARABIC, E.I., fine							
pale picked ..	3 0	4 0		3 5	3 15		
sorts, md. to fin. ..	2 15	3 2		1 8	3 0		
garblings ..	1 5	2 9		1 2	2 3		
TURKEY, pick. gd. to fin. ..	6 10	10 15		6 0	9 0		
second & inf.	3 0	6 10		2 10	5 10		
in sorts ..	2 5	3 5		1 10	2 5		
Gedda	1 12	1 19		1 2	1 6		
BARBARY, white ..	0 0	0 0		0 0	0 0		
brown ..	2 0	0 0		1 9	1 14		
AUSTRALIAN	2 5	3 0		1 17	2 6		
ASAPETIDA, cm. to fin. ..	0 18	2 11		0 18	1 16		
BENJAMIN, 1st & 2nd ..	27 0	45 0		8 0	30 0		
Sumatra 1st & 2nd ..	6 5	12 0		7 10	12 0		
3rd ..	3 10	5 5		3 10	5 0		
COPAL, Angola red ..	6 0	6 15		6 0	6 15		
Benguella ..	4 0	5 0		4 0	5 0		
Sierra Leone, per lb. ..	0 5	0 11		0 7½	0 11		
Manilla	15 0	27 0		15 0	27 0		
DAMMAR, pale	66 0	68 0		57 0	62 0		
Singapore ..	65 0	67 6		57 0	58 0		
EUPHORBIA	9 0	15 0		12 0	20 0		
GALBANUM	0 5	1 3		1 0	1 6		
GAMBOGE, pkcd. pipe per cwt.	220 0	270 0		180 0	240 0		
GOGIACUM	1 3	3 0		0 6	2 0		
KINO	40 0	50 0		50 0	80 0		
KOWIE, rough ..	20 0	45 0		22 0	48 0		
seraped sorts ..	47 0	60 0		50 0	60 0		
MASTIC, picked	4 0	5 0		4 0	5 8		
MYRRH, gd. & fine per cwt.	155 0	224 0		172 6	200 0		
ord. to fair	90 0	150 0		61 0	172 0		
OLIVANUM, p. drop ..	53 0	58 0		58 0	60 0		
amber & ylw.	51 0	55 0		45 0	55 0		
garblings ..	22 0	30 0		22 0	30 0		
SENEOL	65 0	67 0		50 0	60 0		
SANDARAC	95 0	110 0		85 0	105 0		
SHELLAC, Orange ..	90 0	140 0		120 0	130 0		
Liver ..	86 0	110 0		110 0	130 0		
THUS	20 0	21 6		20 0	22 0		
TRAGACANTH, leaf ..	240 0	400 0		280 0	390 0		
in sorts ..	25 0	175 0		25 0	175 0		
OILS.	£ s.	£ s.		£ s.	£ s.		
SKAL, pale	34 10	35 0		34 10	35 0		
yellow to tinged ..	32 0	34 0		80 0	33 0		
brown	30 10	31 10		28 0	29 0		
SPERM	86 0	87 0		96 0	0 0		
Body	0 0	0 0		0 0	0 0		
COD	39 0	0 0		44 0	44 5		

1877.				1876.			
	£ s.	£ s.		£ s.	£ s.		£ s.
Oils, continued:—							
WHALE, South Sea, pale, per tun	35 10	to 0 0					
yellow ..	33 10	35 0					
brown ..	29 0	30 0					
East India, Fish ..	25 0	26 0					
OLIVE, Galipoli	48 0	0 0					
Gloja	48 0	0 0					
Levant	46 0	0 0					
Mogador	0 0	0 0					
Spanish	0 0	0 0					
Sicily	49 0	0 0					
COCOANUT, Coochin ..	41 10	49 10					
Ceylon ..	36 10	37 0					
Sydney ..	30 0	37 0					
GROUND NUT AND GINOLLY:							
Bombay	0 0	0 0					
Madras	42 0	0 0					
PALM, fine	33 0	38 10					
LINSEED	20 0	26 5					
RAPESEED, English, pale ..	34 15	0 0					
brown ..	34 15	0 0					
Foreign, pale ..	37 0	0 0					
brown ..	0 0	0 0					
COTTONSEED	29 0	30 10					
LARD	63 0	0 0					
TALLOW	31 0	54 0					
TURPENTINE, American, oaks.	29 0	0 0					
French ..	0 0	0 0					
PETROLEUM, Crude	0 0	0 0					
refined, per gall.	0 11½	1 0					
Spirit ..	0 10	0 0					
SEEDS.							
ANANAS	49 0	60 0					
CARAWAY, English per cwt.	0 0	0 0					
German, & co.	0 0	0 0					
CORIANDE	0 0	0 0					
HEMP	33 3	35 0					
LINSEED, English per qr.	00 0	66 0					
Black Sea & Azof ..	0 0	0 0					
Calcutta ..	49 0	0 0					
Bombay ..	51 0	0 0					
St. Petersburg ..	50 0	0 0					
Mustard, brown .. per bshl.	12 0	15 0					
white ..	13 0	16 0					
POPPY, East India, per qr.	51 0	52 0					
SPICES.							
CASSIA LIONEA .. per cwt.	55 0	65 0					
Vera	22 0	45 0					
Buds	73 0	76 0					
CINNAMON, Ceylon:							
1st quality	1 9	3 7					
2nd do.	1 6	2 8					
3rd do.	1 2	2 3					
Tellicherry	0 0	0 0					
CLOVES, Penang ..	2 4	2 5					
Ambony ..	1 7	1 8					
Zanzibar ..	1 2	1 3½					
GINGER, Jam., fine per cwt.	91 0	202 6					
Ord. to good ..	54 0	90 0					
African	32 0	33 6					
Bengal	26 0	0 0					
Malabar	0 0	0 0					
Cochin	48 0	115 0					
PEPPER, Bk. Malabar, per lb.	0 4½	0 5½					
Singapore ..	0 4	0 0					
White Tellicherry ..	0 10	1 4					
Cayenne	2 0	3 0					
MACE, 1st quality ..	2 1	3 2					
2nd and inferior ..	1 0	2 0					
NUTMEOS, 78 to 60 to lb.	3 7	4 6					
90 to 80 ..	3 1	3 6					
132 to 95 ..	2 2	3 0					
PIMENTA	0 4½	0 4½					
VARIOUS PRODUCTS.							
COCHINEAL—							
Honduras, black .. per lb.	2 8	2 11					
silver ..	2 6	2 7					
pasty ..	2 5	0 0					
Mexican, black ..	2 6	2 9					
silver ..	2 5	0 0					
Tencrifo, black ..	2 6	3 3					
silver ..	2 5	2 8					
SOAP, Castile	26 0	33 0					
SOY, China	1 7	1 8					
SPONGE, Turk. fin. pkd. per lb.	0 0	0 0					
Fair to good ..	0 0	0 0					
Ordinary ..	0 0	0 0					
Bahama ..	0 0	0 0					
TERRA JAPONICA—							
Gambier	20 0	20 9					
Free cubes ..	34 0	36 0					
Cutch ..	26 6	27 6					
WOOD, DYE, Bar .. per ton	£3 5	£3 10					
Brazil ..	0 0	0 0					
Cani ..	18 0	35 0					
Fustic, Cuba ..	8 10	9 0					
Jamaica ..	5 10	6 0					
Logwood, Campechy ..	9 0	9 10					
Honduras ..	6 10	6 15					
St. Domingo ..	5 10	6 5					
Jamaica ..	5 10	6 5					
LIMA, first pile ..	8 15	9 5					
RED SANDERS ..	6 5	6 10					



WITH the continually-recurring political crises which the difficulties in Turkey bring about, it is hopeless to look for anything like a revival in trade. We have reason to be thankful that our home trade continues so good as it is, and we must resign ourselves to await the end of the Eastern storm before we can expect much new vigour in our export trade.

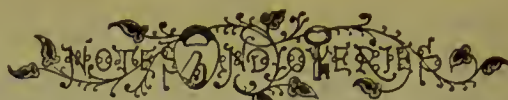
The decline in our exports for March was only about 818,000*l.*, being the difference between 16,920,930*l.* and 17,739,101*l.* in the corresponding period last year. Considering that February showed a diminution of over 2,000,000*l.*, this may almost be regarded as an improvement. Meanwhile the total value of our imports advanced during the month to the extent of more than 7,000,000*l.* This increase being largely made up of raw material for manufacturing purposes, it does seem as if the country is in as prosperous a condition internally as the state of the world generally will allow.

Chemicals share, of course, in the general depression. The production in our large works is still greater than the demand, and prices, therefore, remain weak. Citric and tartaric acid have both declined a trifle, bleaching powder has given way to 6*s.* 9*d.* to 7*s.*, and alkali is dull. The demand, however, has been a little stronger lately, but not enough to materially reduce stocks. Iodine remains at the price we left it last month; there has been a large quantity bought on speculation of a further rise, which is, of course, likely to occur at any moment. For the present, however, there seems a lull, and occasionally a holder parts with some of his stock at a slight loss. Bromine and bromide of potassium have also advanced, the scarcity of bromine being the alleged reason. Quicksilver is a little stronger, and can only be bought now at 7*l.* 10*s.* per bottle. Quinine has advanced rapidly, both Howard's and Pelletier's having advanced to 16*s.* per ounce, and not obtainable in quantity at that. Messrs. Howard will only quote for small quantities for June delivery. Besides an unusually large demand for actual consumption, believers in a European war have speculated heavily in this product, and will probably hold for much higher prices than those which now rule. The prices paid for quinine-yielding bark have advanced extraordinarily. The other day as much as 16*s.* 8*d.* was given for some very rich East Indian. The present prices are the highest ever known, and show an advantage of from 2*s.* 6*d.* to 3*s.* over last month's quotations. If we had to depend on the South American product alone, the price would have been at this time enormous. We are glad to see that an attempt is to be made to cultivate the cinchona on the West Coast of Africa.

With this exception the drug markets have been particularly flat. Opium has had a decidedly downward tendency, and buyers are not tempted. Balsam of copaiba has sold at easier rates, and tolu is likewise cheaper. Castor oil has fallen in value nearly $\frac{1}{2}$ *d.* per lb. The new cod liver oil has arrived, and though it is said to be in short supply, there is no eagerness to buy. We have heard that the samples are very good. Camomile flowers are selling at much dearer prices, and the scarcity is said to be greater than was anticipated. Chloral hydrate has been advanced, and glycerine is expected to be dearer.

Oils have been very dull generally; rape, sperm and cod showing a decline. Linseed, however, is firm and advancing. Petroleum has declined still further, and now sells at 1*s.* or under. Turpentine has still further advanced.

Indigo and cochineal sales have both been held during the past few days, and have both been characterised by the same utter absence of animation. Generally speaking indigos were 3*d.* to 4*d.* lower, for no reason besides a disinclination to buy, although the stock is known to be small. Cochineal also showed a decline of about 2*d.* per lb. all round.



W. W. asks:—"Can you or any of your correspondents kindly inform me of the best means of bleaching bones? I have the skeleton of a horse, which I want to prepare for show. Of course, if I can bleach the bones with the skeleton entire, it will be far better than to have it taken to pieces."

There is no legal obstacle to your use of the title "veterinary pharmacist."

Egg Powder.—Mr. W. Thirlby (Leicester) refers to our remark in last Notes and Queries, that "egg powder is baking powder coloured with turmeric." He looked in "Enquire Within upon Everything," and read as follows:—"Egg powders contain wheat, potato, and rice flours, and are coloured with chrome yellow, or chromate of lead and turmeric?" Our correspondent thinks this more likely to be correct than the former statement. We confess that we do not, but we leave the choice of formulae to those whom it may concern.

Question.—You do not require a license to sell quinine wine prepared according to the British Pharmacopœia.

An Anxious Inquirer.—Your "discovery" will not make its own way. You will only get it well planted by extensive and expensive advertising in some form or other. No wholesale house will do more than keep it in stock; it is for you to make your article familiar to the trade and the public, and to create the demand. The process is one which requires immense faith and unflinching courage.

We have received several letters, warmly expressed (to put it mildly), respecting the policy adopted by the organ of the Pharmaceutical Society in reference to the prosecution of chemists under the Apothecaries Act. That journal, while avoiding any expression of editorial opinion, has, we are told, suppressed letters on the chemists' side, but has inserted one from a correspondent who seems to cordially approve of the prosecution of his fellow pharmacists. Perhaps this was published as a pharmaceutical curiosity. Anyway, the conduct of our contemporary is a matter between the members of the society and the editor, and as we are just now very pressed with other matters, we think it hardly necessary for the moment to bestow our advice in a quarter where it would probably fall of appreciation.

Soluble Glass.—Heat together 15 parts pure sand, 10 carbonate of potash, and 1 of charcoal. This can be dissolved in 4 or 5 parts of boiling water, which should then be evaporated to the sp. gr. 1.24.

A correspondent writes:—"Can you inform me where I can obtain a list of the names of the Medical Defence Association? If they were better known the chemists would be able to appreciate them as they deserve."—We have not seen such a list, nor do we think it desirable to make a personal matter of the question. Let us fight the monstrous claim set up without mercy, but we can afford to be generous to the narrow-minded individuals who oppose us.

Curious.—As a rule, the θ tincture in homœopathy contains 1 in 10 of all that is soluble in the substance treated. One part of θ tincture with nine parts of spirit, yield the 1 x tincture; one part of the 1 x tincture with nine parts of spirit yield the 2 x tincture, and so on. But the rule is different with those substances which are merely dissolved in water (as nitric acid), or prepared by trituration (as carbo). In these cases the substance itself is called θ . Bromodyne is merely a fanciful name chosen by the maker to represent his medicine, but not to indicate its character. You will find it advertised in our pages.

J. A.—Beasley's "Druggist's Receipt Book" (Churchill) 6*s.*, contains an excellent collection of formulae for horse and cattle medicines.

R. & S. want a formula for an "Essence for Deafness" sent out by several London houses.

Ferrum.—Considering that caustic potash is often made by evaporating the solution in an iron vessel, we should expect you might keep your solution in the boiler you speak of without chemical action; but the boiler should be quite clean, and, after all, we should imagine glass vessels would be preferable.

Phi Beta (U.S.)—The injection you refer to is said to be a solution of 3 parts of sulphate of zinc, and $\frac{1}{2}$ parts acetate of lead in 200 parts of an aqueous tincture of opium and catechu (each $\frac{1}{2}$ part), and saffron 1 part.

Coating Glass.—To render glass impervious to the direct rays of the sun, but not so opaque as to exclude light, powder some fluorspar and mix it with sulphuric acid, and rub the mixture on the glass with a piece of lead. Then heat the glass on some stove or other arrangement by which the fumes can pass up the chimney; and when cool, wash the plate with dilute solution of potash, and rinse in water.—*Canad. Pharm. Journ.*